

Starred Items are digested at the right

### EDITORIAL

Passing Through Only Once .....	7
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### NEWS OF INDUSTRY

*Special Report: Titanium Scrap A Problem .....	19
*Marketing: National Cuts Detroit Steel Prices ..	21
*Production: Powder Coated Welding Rods Gain ..	22
*Continuous Galvanizing Surges ..	23
*Transportation: Freight Car Future Better .....	24
Research: How to Cut Drudgery, Boost Output ..	26
*Defense: Standby Control Need Fades .....	29
Industrial Briefs .....	34
Personnel: Iron Age Salutes .....	49
Iron Age Introduces .....	51
Clearing House .....	106

### NEWS ANALYSIS

Newsfront .....	17
*Report to Management .....	33
Automotive Assembly Line .....	36
This Week in Washington .....	41
West Coast Report .....	45
*Machine Tool High Spots .....	47

### TECHNICAL ARTICLES

*Vibration Testing Improves Machine Tools .....	59
*In-Line Pickling Aids Continuous Production ..	62
*Surface Treatments Improve Aluminum .....	65
*Cold Forming Methods Save Materials, Costs ..	69
Technical Briefs .....	72

### MARKETS & PRICES

*The Iron Age Summary—Steel Outlook .....	87
*Steel Product Markets .....	88
Comparison of Prices .....	89
Iron and Steel Scrap Markets .....	90
*Nonferrous Markets .....	94
Steel Prices .....	96

### REGULAR DEPARTMENTS

Dear Editor .....	9
Fatigue Cracks .....	10
Dates to Remember .....	13
Free Literature .....	79
New Equipment .....	83

### INDEX OF ADVERTISERS .....

112

Copyright 1954, by Chilton Co. (Inc.)

THE IRON AGE, published every Thursday by CHILTON CO. (INC.), Chestnut & 56th Sts., Philadelphia 39, Pa. Entered as second class matter, Nov. 8, 1932, at the Post Office at Philadelphia under the act of March 3, 1879. \$5 for 1 year; \$8 for 2 years in United States, its territories and Canada; other Western Hemisphere Countries, \$15; other Foreign Countries, \$25 per year. Single copies, 50¢. Annual Review Issue, \$2.00. Cables: "Ironage," N. Y.

Address mail to 100 E. 42 St., N. Y. 17, N. Y.

### NEWS DEVELOPMENTS

#### TITANIUM: SCRAP USE A MAJOR PROBLEM — P. 19

More and better use of titanium scrap could unlock markets by helping lower prices. Further complicating the problem is lack of uniformity in commercial titanium today. Special equipment needed to process titanium scrap is expensive and the market is called too shaky to justify risk. Proper segregation of different alloys is vital—and hasn't been practiced by consumers. This makes present scrap almost useless. It might sub for ferrotitanium.

#### IRON POWDER COATED WELDING RODS GAIN — P. 22

Coating welding rods with iron powder is an old idea. But it only began to pay off in this country during the past year with new developments permitting faster welding speeds—up to 50 pct faster on some jobs. Percentage of total industry is still small but it's making rapid gains.

#### FREIGHT CARS: FUTURE BETTER, NOT BRIGHT — P. 24

Backlogs of commercial car builders are still in bad shape. Now amount to 8677, which is about one month's single-shift production. Hope general business pickup will mean increase in orders, but no chance of reaching capacity operations.

#### SEE STANDBY CONTROL NEED FADING — P. 29

Possibility that the President will ask for standby control powers is apparently reduced by appointment of E. F. Phelps to head program. He is OPA, OPS veteran. Calls main job "policy setting."

#### HOPE FOR CORPORATE TAX CUT IS DEAD — P. 33

There's no chance that the scheduled reduction in corporate and excise taxes will be allowed to go through. Prospect that the \$2.2 billion tax cut would be permitted never has been good, was chilled further by the Democrat's November election victory. Last week it received the death blow when the President indicated he would ask Congress to extend the tax.

#### AUTOMATION GETTING MIXED RECEPTION — P. 47

Reaction to automation varies greatly. Some people are afraid it will cause unemployment and say it hasn't resulted in reduced prices. Proponents argue that it will hurt some people but that it won't come fast enough to cause a major upset. See it raising the standard of living for people all over the world.

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## **MARKETS & PRICES**

### **NATIONAL HAS STEEL PRICE POT BUBBLING — P. 21**

In a move to court automakers, National Steel cut prices on most steel products \$1 per ton at its Detroit division. Other steelmakers amazed because reduction comes at time of peak demand. U. S. Steel is first to meet competition.

### **CONTINUOUS GALVANIZING SURGES AHEAD — P. 23**

Production of galvanized sheet is headed for a new record in 1954 despite the dip in most steel products. But the boom in continuous lines is even more spectacular than the new record. With 22 continuous lines in operation, five more are under construction and another nine are in the discussion stage. Sales outlook is solid through first half '55.

### **STRONG DEMAND CHECKS HOLIDAY STEEL DIP — P. 87**

Strong demand from consumers will keep the holiday dip in steel production from going as deep as usual. During Christmas week of last year the ingot rate fell 20 points, from 85.5 pct of capacity to 65.5 pct of capacity. This year the dip is expected to be less than half that deep. Some steel firms will pay extra to keep production going, and some will keep furnaces going while halting finishing lines.

### **SEE TIGHT FIRST QUARTER FOR OIL COUNTRY — P. 88**

Oil companies have been living off inventory for months. Increased capacity plus comfortable backlogs brought this about. Not reduced drilling. This year's drilling will be as good as 1953's. Producers see an order schedule scramble in February.

### **COPPER OUTPUT REBOUNDS TO POSTWAR HIGH—P. 94**

Domestic production of primary crude copper hit a total of 91,094 tons in November—the highest since May, 1944. Refined output up 26,000 tons and deliveries rose 17,000 tons. Stocks of refined copper edged upward but the pile is still small.

### **REDS NARROW THE GAP IN STEEL PRODUCTION**

Russian steel production gained 7.4 pct in 1954 while United States output slumped 21.5 pct from the record level of 1953. The U. S. now has a 2 to 1 advantage in steel output instead of the 3 to 1 advantage it used to enjoy. Sharp gains in Western European nations helped offset the surging Communist output.

## **ENGINEERING & PRODUCTION**

### **VIBRATION TESTING IMPROVES MACHINING — P. 59**

In plants using machine tools, vibration instruments can be used for increasing output as well as for maintenance and trouble shooting. Inexpensive and easy to use, they take the guesswork out of detecting and measuring machine tool vibration. Cutting or machining problems which don't lend themselves to usual corrective measures are subjected to vibration tests. They have been applied successfully to solve milling, turning and grinding problems on precision parts.

### **IN-LINE PICKLING AIDS CONTINUOUS OUTPUT — P. 62**

New developments in exhaust systems and acid-resistant materials permit fume-free integration of pickling operations for continuous production. Time and money are saved when descaling is not done at remote areas. The setup features a flexible dual-line arrangement.

### **SURFACE TREATMENTS IMPROVE ALUMINUM — P. 65**

Good surface finishes on aluminum depend largely on thorough prior cleaning. It is also a "must" before joining by welding, brazing, soldering or spot welding. The method to be used will depend on the purpose for cleaning. Among the methods used are: electrocleaning, organic solvent cleaning, etching, alkali cleaning, acid cleaning and ultrasonic cleaning.

### **COLD FORMING METHODS OFFER SAVINGS — P. 69**

Rapid growth of many new processes can be attributed directly to savings in materials and production costs through better forming methods. Among the casting processes are sand, lost wax, die and shell. Hot forging and extruding of metals form other segments of this important trend. Now, cold plastic deformation under high pressure is taking a prominent place among these processes. Often, further finishing is not required.

## **NEXT WEEK:**

### **HOW NOTCH SENSITIVE ARE TITANIUM ALLOYS?**

Titanium alloys containing vanadium show a strong relationship between notch sensitivity and alloy composition. Microstructure did not have an important effect on notch sensitivity. Notch strength tended to increase uniformly with greater notch depth. Radial strain gages were used to obtain the strain data.





## Laboratory, field tests prove superiority of NEW JEFFREY "PERMASEAL" IDLERS

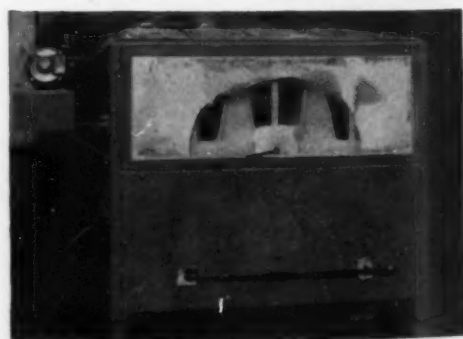
The new double flexible seals on Jeffrey PERMASEAL Belt Idlers are hailed as the greatest advance in conveying engineering in the last 20 years.

Laboratory and field tests have proved these flexible contact seals keep dirt out and grease in *for the life of the idler*. These seals have been tested with outstanding results under greatly accelerated conditions of wet sand, dry sand and airborne dust in our Research Laboratory. Field tests (such as the large installation above) are demonstrating the merits of PERMASEAL idlers in conveying iron ore, coal, stone and foundry sand.

Jeffrey PERMASEAL Belt Idlers with new double flexible seals are available in all types and sizes. They will vastly improve your complete conveyor operations.

WRITE FOR TECHNICAL INFORMATION AND ESTIMATES

Above: Installation of Jeffrey PERMASEAL Belt Idlers at the Pennsylvania Railroad's new Philadelphia ore dock. Twin 54" belts convey an ultimate capacity of 10,800 TPH. Each belt travels 80' to top of terminal house at rate of 500 FPM.



Airborne-dust test in Jeffrey Research Laboratory (unretouched).



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## Editorial:

### Passing Through Only Once

**W**E show our true nature during the Christmas season. This is the time when we think with our hearts. This is the time too when we wish we could be this way all year.

It would be wonderful if all of us could act out the spirit of the Christmas season from one year's end to the next. Some hardy and blessed souls do. As much as they can they serve as a living example for most of us who get lost on the way.

One of the drawbacks of our industrial progress has been the diminishing part that personal contact has played and will play in the years to come. We are in the atomic age already. We are entering a vast automation stage where from here on out the only contact some people will have with others will be in the form of punched cards or television screens.

No matter how far we progress industrially there is no substitute for personal contact—or what's even more important, "reaching" the other fellow. All the communication implements in the world can't do the "whole" job any more than they can produce a soul. They do their part by supplementing the personal touch—that's about all.

When you read about strikes or fights; misunderstandings or quibblings; arguments or arrogance; somewhere, some place, the right face-to-face approach has not been used. Some people think that the mechanical part of the personal approach is enough. It isn't. The heart has to be there. The "right" thing or the "proper" thing isn't worth a tinker's dam if it isn't sincere.

All these things we know at Christmas time. We can be thankful that then we shed a lot of the hardness that life has built around us. Maybe we ought to take a little more time in our business, in our social life and in our home life to let a little of the Golden Rule rub off onto us all year round.

Since this is the stage in world development where cities can be wiped out in minutes, a little advice from a fellow long since dead might be worthwhile. Here is what he said:

"I shall pass through this world but once. Any good therefore that I can do or any kindness that I can show to any human being let me do it now. Let me not defer or neglect it, for I shall not pass this way again."

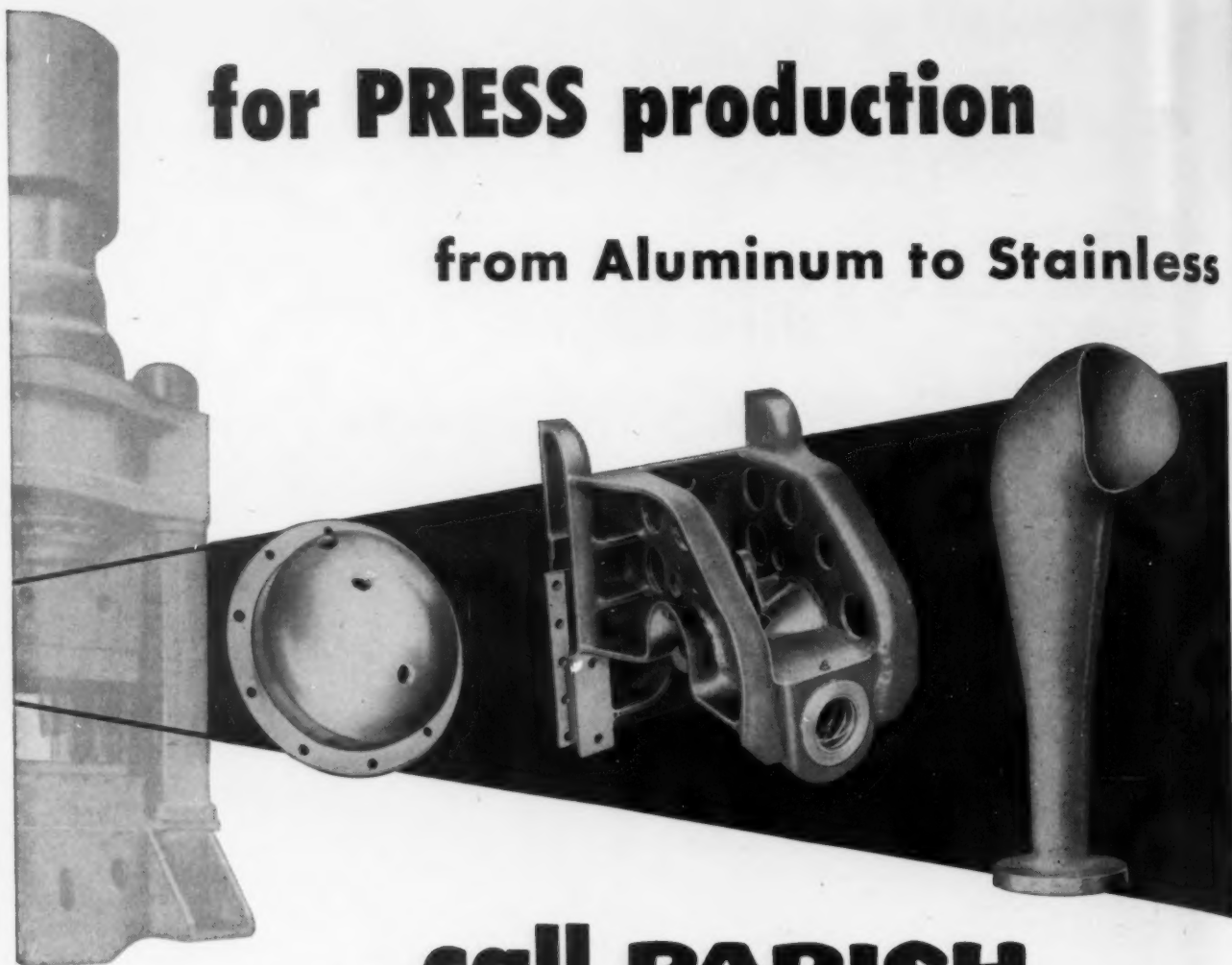
*Tom Campbell*

EDITOR

December 23, 1954

# for **PRESS** production

## from Aluminum to Stainless



## ...call **PARISH**

When you need parts of any analysis—aluminum, carbon steel, high tensile steel, heat-treated alloy steels, or stainless—big parts or small ones, simple or complex, bolted assemblies or weldments—your best bet is Parish.

Here's why. We have the men, trained and ready for high-run production. We have the presses, and we have the room to do the job right.

But that's not all. If you have a design or engineering problem, need to cut costs, want to improve a part in performance or appearance, we have the experience to help.

Put all the things Parish has to offer you to work now—to help improve your production and profit picture. Write, 'phone or telegraph, or just send us a print or sketch-drawing. We'll be glad to tell you what we can do without obligation.



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524 Folsom Street, San Francisco, Cal.

413 East 12th Street, Los Angeles, Cal.

**PARISH PRESSED METAL PARTS  
FOR BETTER PRODUCTS**

dear editor:

letters from readers

### What the People Don't Know

Sir:

We have been somewhat disappointed in your recent editorial. Wouldn't it be well to do a little bit more constructive thinking and writing?

There is no doubt, that few people realize the seriousness of things abroad. But, what if those of us who know something about it got up on the housetops and shouted and all of Washington's powers that are, did likewise, what would be accomplished? Masses will never be called upon to solve these problems and you will only worry, bewilder, confuse and cause discontent.

Hasn't it always been this way? Could we accomplish anything with those who we are compelled to treat within our foreign affairs by throwing the country into hysteria and exposing our hand to the world? The facts that you reveal are not shrouded in so much mystery; anyone who reads the papers and the various publications treating with foreign affairs knows the few things that you think the people don't generally know. I am not so sure you are right about that. If you had substituted under the following heading: "This is the thing that should be done" and then give the country and the administration the advantage of your wisdom and knowledge on foreign affairs, you would be lending something constructive to the maintenance of your country and the free enterprise system. W. A. Boesche, President, The Ornamental Iron Work Co., Akron, O.

Sir:

Permit me to congratulate you on your editorial of Dec. 2 "What the People Don't Know," which well expressed a great and tragic fact of our political status, and

our security risk. Many of us feel we are going down the last mile in this fight against atheistic communism. J. W. Brandt, Brandt Machinery Co., Pittsburgh.

Sir:

The Dec. 2 issue of THE IRON AGE has just come to my desk. Thank you for the editorial "What the People Don't Know."

I believe you are exactly right. As one of the hundreds of American citizens who will read it, I want to say again, "Thank you." J. F. Mackenzie, Librarian, Melpar, Inc., Falls Church, Va.

### Labor vs. Automation

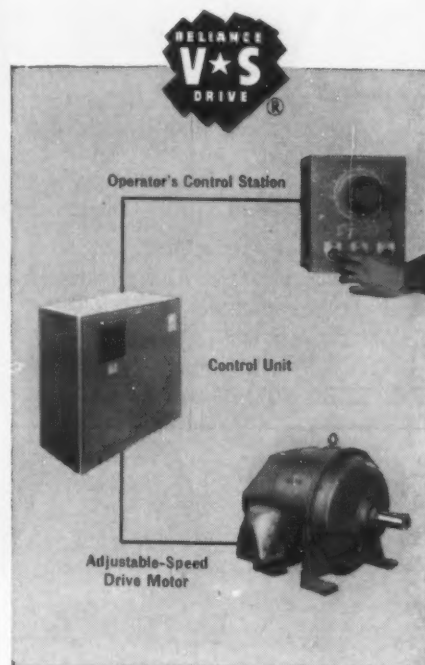
Sir:

I took the first opportunity this morning to look over your story on automation in the Oct. 21 issue.

I think it does a very fine job of putting the finger on what undoubtedly will be one of the rallying points for labor negotiations during the next few years. This certainly makes an interesting story and I think this is one of the best interpretations of what the recent UAW announcements of policy really means.

I have seen very little in the popular or trade press on what either other union people or major manufacturing men who deal in the area of labor relations think about this particular move. In a way, this is sort of an extension of the early phases of mechanization which caused so much havoc 20 or 30 years ago. Automation is undoubtedly just the ultimate step in the whole processes of mechanization. C. E. St. Thomas, Manager, Advertising & Sales Promotion, Carboloy Dept., General Electric Co., Detroit.

## ALL-ELECTRIC ADJUSTABLE-SPEED DRIVE MAKES MACHINERY DO ITS BEST!



Reliance V\*S Drive converts waste time to productive time by providing easily adjustable speeds—fast, smooth stopping— inching, jogging or creeping—proper tension control—accurate reversal at any point—with manual or automatic control at the machine or from remote locations. Write for Bulletin D-2311—or contact your nearby Reliance Sales Office.

D-124

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December 23, 1954



## fatigue cracks

by William M. Coffey

### Christmas Reading

Here are some splendid new titles for your Christmas reading published recently by your government in Washington. Make wonderful presents for the whole family.

**SODIUM FLUORIDE GOES TO SCHOOL**—a heart-warming little story of little Miss Fluoride's very first day at school.

**TESTING HYDROMETERS**—it's time you tested your hydrometer! 101 little-known facts that you should know about your hydrometer.

**COMPOSITION OF COOKED FISH DISHES**—do you really know what you're eating? How to rid the sea air from the scrambled eggs frying pan or how to tell a fish stick from a broiled guppie.

**WHAT TO DO IF YOUR HOME FREEZER STOPS**—curl up before

the fire on Christmas with this delightful little story. You'll appreciate it all the more if your home freezer has stopped.

**ADHESIVE PLASTERS**—if you have been having trouble with your adhesive plasters this is the book for you. Exciting, but just a bit sticky.

**AUTOMOTIVE LIFTS**—how to avoid pitfalls. Keeps you on edge from page 1 to page 3.

... and don't forget your Income Tax!

MERRY CHRISTMAS

... and keep sending the money

### Letters

Over a year ago we received a

distress call from a young German engineer who wanted to come to America. He needed a sponsor, so we printed his plea for help here in your ffj. Last week we received this:

Dear Mr. Coffey:

*Do you remember, that I have written you a letter from Germany? I had begged you for an advertisement in your magazine to find a sponsor. Before several months from the Consulate General in Frankfurt I have obtained my visa. Two months since I'm in the United States. But at the advertisement I have become not an answer.*

*Now I have the desire, to order a subscription for your magazine. Once again my best thanks for your kindness.*

*Your very truly,  
Werner Momm*

We have found another loyal reader for Fatigue Cracks! This once again brings our total to 23 and we know Mr. Momm will make a fine replacement for J. Porkle-smith Smythe III who, as we told you before, was taken away. Our very best wishes, Mr. Momm.

### Puzzlers

The snail in the December 2 puzzler makes the complete trip in 20 days. (Solution on request.) Winners: C. W. McKinley, George W. Frederick (who added 3 hours and some for rest periods at the top), Vincent Burns, Anthony Faust, J. T. Little, Frank Foley, Dick Granville, Max Clyne and A. R. Buckley.

### New Puzzler

A man wanted to build a race track with only one circular segment and with both tangents meeting at a point; each tangent and the circular segment to be of equal length, one-third of a mile each. What would be the radius of the curved portion of the track?

# SAVE!

## WITH A HANNIFIN AIR PRESS

It's the ideal press for that occasional pressing job. These presses operate off ordinary shop air supply. They're fast and safe. Over 30 models to choose from...many for either bench or floor mounting. Capacities from ½ to 18 tons. Day-light to 46 inches...reach to 12 inches. Prompt delivery.

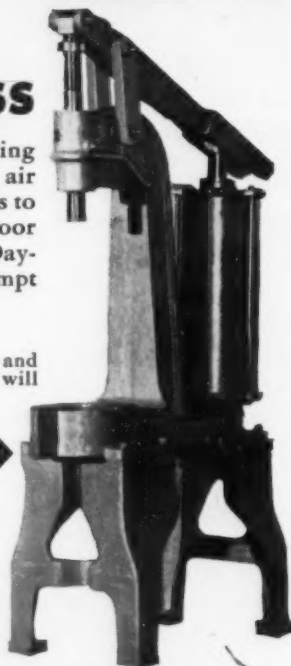


WRITE. Complete information and prices on Hannifin Air Presses will be sent on request.

6 Tons (Model B-2) One of more than 30 models. Press with base, \$554.

1-ton Hand-D-Press. For small parts manufacturers. Press, \$232.

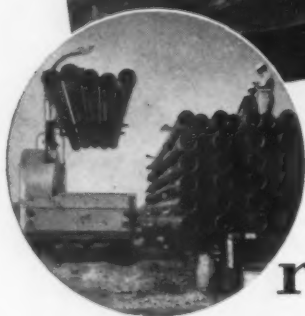
Prices F.O.B. our press plant, St. Marys, Ohio, subject to change without notice.



# HANNIFIN

HANNIFIN CORPORATION, 513 S. WOLF ROAD, DES PLAINES, ILLINOIS





## *Traveloader* replaces 3 trucks and releases 6 men for other work

● A Traveloader is used by Kyle-Taylor Lumber Company, Berwick, La., to transport pipe from river dock to storage. It has replaced two pipe trailers and a gin-pole truck formerly used on this job, reduced man-power required from 15 to 9 and made time savings of about 70%.

This company, serving oil producers, receives pipe in barges at the river dock. A truck crane unloads and places the pipe on the dock. The Traveloader picks it up five lengths at a time, transports it to the storage yard, and stacks it neatly on racks for further disposition.

Time studies reveal the speed with which Traveloader works. Loading time at dock averages 35 seconds. Hauling to storage, stacking and returning to dock (round trip .55 miles) averages 3 minutes 8 seconds. The stacking part of this operation takes only 24

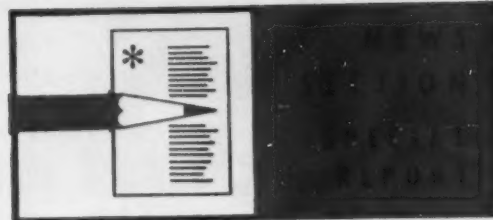
seconds! As a result the crane at the dock never has to wait for the Traveloader.

Since the company operates 24 hours, 7 days per week, the cost savings are substantial. Moreover, 6 more workers were made available without increasing payroll, and two less mechanized units require maintenance. "This machine is by far the finest that I have seen for handling pipe. It has doubled our capacity with less labor," says Mr. J. E. Kyle, Jr., Vice President.

Write for Bulletin 1360. It completely describes the remarkable TRAVELOADER that carries like a straddle truck, delivers like a road truck, and stacks like a fork truck. The Baker-Raulang Company, 1227 West 80th Street, Cleveland 2, Ohio.

**Baker**  
industrial trucks





## TITANIUM: Scrap Use A Major Problem

Utilization of scrap might unlock titanium markets through lower prices . . . But economic and technological difficulties bar the way . . . Believe some might sub for ferrotitanium—By J. B. Delaney.

◆ EVERYBODY AGREES it would be a good thing if more titanium scrap were used in producing titanium metal.

The problem is one of growing importance. Titanium scrap is a valuable metallic. It is the residue of material that sells for \$9 to \$15 per lb. Eventually it will be a means of reducing the cost of titanium, just as steel scrap has helped reduce the cost of steel.

The number one problem facing titanium—and one which further complicates the scrap problem—is the lack of uniform quality in commercially available titanium. This has prevented greater use of the metal. High prices, which efficient scrap use would reduce, also tend to hold down use.

Consumption in 1954 has been far lower than was originally anticipated as a result of all these factors and further expansion of the industry has been delayed.

### U. S. Would Aid Scrap

Actually, some scrap is being used in producing primary titanium metal. Percentage varies among producers and from heat to heat—as low as 5 pct and as much as 25-30 pct. But most of this is so-called “home” scrap generated by the producers themselves. Fabricator scrap, which is sizable in amount, is largely not being consumed, except for light material such as turnings.

Both producers and the U. S. government are interested in increasing consumption of scrap. The Government has indicated its willingness to give financial assistance in the interest of promoting more scrap utilization.

But there are problems—both economic and technological.

At the root of the economic problem is the present easiness of the titanium market and uncertainty as to when it's going to take a turn for the better. Applications have not expanded in proportion to increases in capacity.

### Equipment Is Costly

One producer points to the cost of installing cleaning, handling and analyzing equipment for processing scrap in substantial amounts. He

also talks about special furnaces to handle large sections of scrap, such as bar crops.

“Sure,” he says, “the government is willing to offer financial assistance. But what happens if the market really goes haywire after we get all this expensive equipment installed? There are a million and one other places we can use our money to better advantage just now.”

Another producer considers the problem more of a technological one. He contends that titanium sponge of higher purity would permit toleration of more scrap in the melt. He's already using up to 30 pct scrap.

## What Scrap Use Means

**Rapid commercial growth of titanium could ultimately follow the pattern established in stainless steel 25 years ago. At that time development of methods for efficient utilization of scrap proved the key to lower prices and broader use of stainless steels.**

**Titanium people feel the same can happen in their industry. But these problems stand in the way:**

● **High cost of installing equipment for cleaning, handling and analyzing large quantities of scrap in view of uncertain market.**

● **Technological difficulties in introducing scrap to a metal already plagued by inconsistency of quality.**

● **Lack of proper segregation by scrap generators.**

### What Questions Are

The U. S. government, titanium's biggest customer through the Air Force, is interested in promoting more scrap utilization for a number of reasons, including: (1) eventual reduction in price of titanium, and (2) the influence of scrap on the need for additional sponge capacity.

What the government is setting out to learn is (1) the amount and type of scrap produced; (2) how much can be utilized economically; (3) how much can be recovered; (4) what will it cost; (5) what is needed to keep it in usable condition; (6) what price should be paid to producers and handlers; and (7) how to direct it back to industry.

At the moment, the government is feeling its way. No one in Washington seems to have any important answers yet.

And it's no wonder. No one knows how much titanium scrap is

## SPECIAL REPORT

piled around the country. And if it were known, there would still be the problem of determining how much of it would be recoverable. Estimates of the scrap pile range from "less than 500,000 lb" to as much as 2 million lb. It's not likely that even 2 million lb are available since only 5.2 million lb of mill products have been produced in the last 3 years.

### Much Scrap Useless

But scrap loss is high. Producers scrap an average of 40-50 pct, of which 10-15 pct is non-recoverable (grinding, pickling, etc.). Fabricator scrap averages over 40 pct, including a high of 85-90 pct on forgings to 15 pct on sheets.

Handling titanium scrap is a ticklish matter. Frankel Co., Inc., of Detroit, which has been processing valuable alloy scraps for 25 years, is still struggling with titanium after 18 months' experience. Even dust has an effect on it, says Frankel. It picks up hydrogen, oxygen, and nitrogen. Virtually every piece must be handled with kid gloves.

The Frankel Co. has developed special machines and handling methods for what is admittedly a tricky job of segregation. Charles Brown, president, and Robert Ruch, vice-president, call it the "jewelry business" of the scrap trade. Price to the consumer ranges from 40¢ to \$1.25 per lb. It's shipped in boxes—not freight cars.

A lot of titanium's scrap has been hopelessly mixed through carelessness in fabricator plants. That's why producers are trying to educate consumers to segregate the various alloys, and some progress is being made.

It's believed that some of the mixed scrap can be salvaged in steelmaking as a substitute for ferro-titanium.

## Copper:

**See boost in demand for '55  
with adequate supply.**

Copper and copper-base alloy fabricated products probably will be in greater demand in 1955, says Commerce Dept., which also foresees an adequate supply of copper next year. Thriving construction, plus increases in new orders for durable

goods, will keep demand at a high pitch, say officials.

Barring unforeseen work stoppages there should be enough copper to supply the greater quantities required. By the end of this year, four major new mines will be in production, three in Arizona and one in Michigan. When these are in full operation they will add some 9500 net tons per month.

Reviewing the current year, Commerce Dept. says shipments of copper-base mill and foundry products will total an estimated 15 pct less than in 1953, when the highest figures since World War II were recorded. By comparison, shipments for 1954 are the second highest for the postwar years.

Domestic output of refined copper in the third and fourth quarters is calculated at about 54,000 net tons less than was anticipated because of strikes in mining, smelting, and refining industries.

## New England:

**New firm to take over Stanley  
plant, boost capacity.**

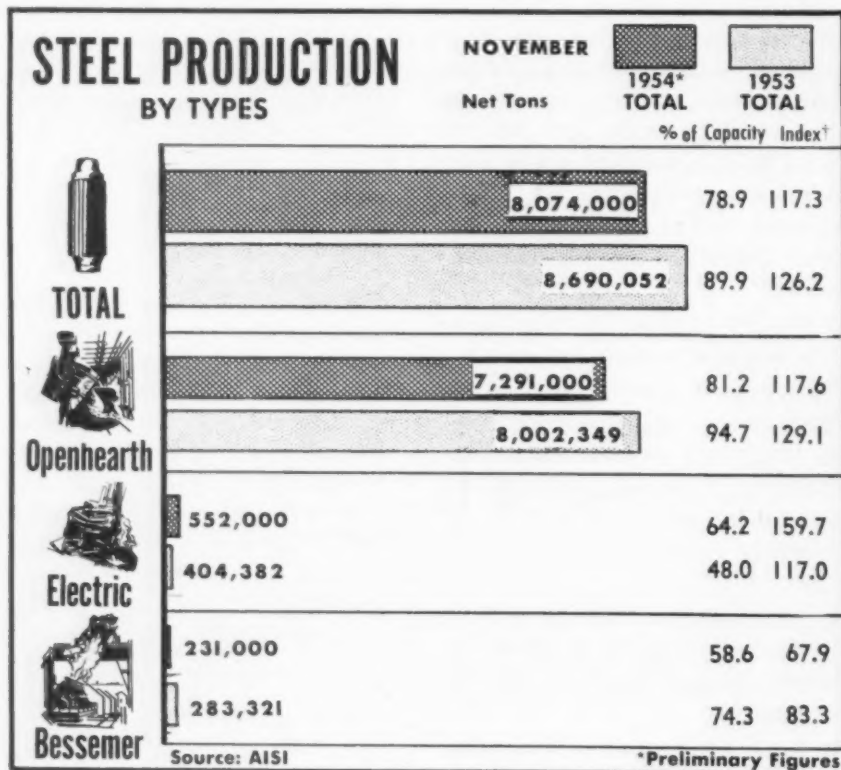
Latest step in the efforts to get a steel mill for New England is the incorporation of Northeastern Steel Corp. in Connecticut. The new firm will acquire The Stanley Works plant at Bridgeport with openhearth capacity of 188,280 tons annually and will install new electric furnaces to boost total capacity to about 300,000 tons.

Deal with Stanley Works does not include the cold-rolled strip plant at New Britain, Conn.

Northeastern will be a specialty mill producing hot-rolled specialty steels for the New England and eastern New York markets, said Walter P. Jacob, who will be board chairman of the new company. Part of the present strip rolling facilities will be converted for production of carbon and alloy bars.

Overall costs are expected to be something over \$18 million, a far cry from the original proposals for a \$250 million integrated mill set forth in 1950. No blast furnace will be built. Chief raw material will be scrap.

Stanley employees will be carried over to the new firm.



† Index of production based on average production of the three years 1947-1948-1949

## STEEL: The Price Pot Is Bubbling

National cuts prices \$1 per ton at its Detroit division . . . Seen as move to court automakers . . . Other steel producers amazed . . . Cut comes at time of peak demand . . . U. S. Steel first to follow—By R. D. Raddant.

♦ **DETROIT AUTOMAKERS** gained \$1 a ton on most steel products last week when National Steel announced price cuts at Great Lakes Steel, its Detroit division.

Other Detroit producers prepared to fall in line and major steel companies reluctantly got ready to absorb another \$1 freight cost into the Motor City on products produced by Great Lakes.

In effect, National Steel lowered the differential between Pittsburgh and Detroit from 15¢ per 100 lb to 10¢, or from \$3 per ton to \$2. It was the second cut this year in the differential which was dropped from \$4 a ton to \$3 in midsummer.

### Steelmakers Don't Like It

The cuts will be felt principally in flat-rolled, which makes up the bulk of Great Lakes' capacity. However, the cuts were also extended to hot-rolled bars and plates which Great Lakes produces as well as to its high strength low alloy series.

Reaction from automakers was highly favorable, although there was little cause to believe the price cut would result in any change in auto prices. Feeling among automakers is that they had absorbed previous freight hikes and that the cut was not of proportions to warrant auto price changes.

Reaction among steel producers was far from favorable, particularly among smaller Detroit producers and cold finishers. Most expressed amazement that the price cut comes at the peak of demand, when Great Lakes and other producers are turning away flat-rolled orders.

Asked if his company intended to meet the price cut, one vice-president ruefully replied: "Don't

say we were forced into it. Say we were cajoled into it."

Most major producers were slow to adjust their price policies, although U. S. Steel quickly notified big auto producers that it would meet the price change.

One Detroit sales manager, who said he had no word from the home office, said he favored not meeting the price cut with further freight absorption. However, auto steel purchasers were confident that all would follow U. S. Steel's announced policy.

In Detroit only one basic reason was discussed as causing National Steel's move—desire to cement relations with the auto industry.

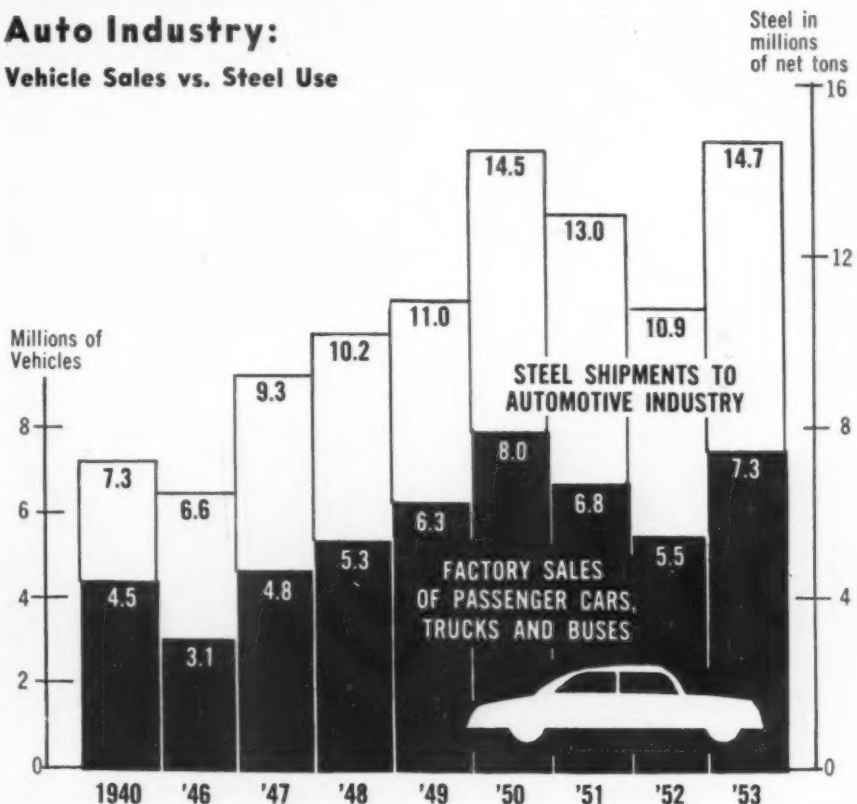
Great Lakes is the biggest supplier of flat-rolled to the auto industry, providing an estimated 40 pct of the flat-rolled steel used by automakers.

It is no secret that after the change in administration which occurred at Great Lakes during the past year, a concerted effort was made to improve customer relations.

### Won't Help All Auto Plants

Not all the auto industry will be affected by the price changes, but just those auto plants concentrated around Detroit and Michigan. Many manufacturing and stamping operations are now located in

**Auto Industry:**  
Vehicle Sales vs. Steel Use





## WELDING: Coated Rods Making Gains

**Iron powder coatings on welding rods are an old idea . . . But new developments permitting faster speeds are spurring acceptance in U. S. industry . . . Makes welding easier—By T. M. Rohan.**

◆ NEW AMMUNITION for the U. S. welding industry is the iron powder coated electrode. Its greatest advantage: Up to a 50 pct increase in welding speed on some jobs—thus drastically cutting labor and overhead which represent 86 pct of total welding costs. Another advantage is that good welds can be made more easily by relatively inexperienced welders.

Only a year after their introduction by U. S. manufacturers, welding rods with powdered iron coatings are the fastest growing segment of the \$104 million per year welding rod industry. No breakdown of sales of powder coated vs. conventional types is available. Percentage so far is small—but coming up fast.

All leading firms are now turning them out. Lincoln Electric Co.,

Cleveland, introduced them in this country and now sells them as standard on all manual high production jobs where they're applicable.

Although the idea of adding iron to electrode coatings dates from the early years of Otto Kelsing's work in Sweden, such electrodes were not commercially available until about 10 years ago when European companies developed them. European types were sold in the U. S. for about 10 years at 40¢ per lb. compared to present U. S.-manufactured price of 20¢ per lb.

In actual practice they were easy to use and produced neat welds. Their chief difficulty in the American market was their high cost, inability to restrike, and the fact that they offered little in the way of increased speed. They did, however, provide contact operation, smooth arc characteristics and minimum spatter loss.

U. S. manufacturers have licked the high cost factor and, in addition to the excellent operating

characteristics, have added to their design high deposition rates which increase welding speeds up to 50 pct.

Manufacturers like Lincoln, Metal & Thermit, A. O. Smith, General Electric, Hobart and Air Reduction Co. jealously guard the secret of their coating and techniques of applying it.

In a general way, regular welding rod purchased from steel producers has a coating extruded on it from a pressure chamber containing the iron oxide in clay-like consistency.

Types currently being turned out commercially are for downhand use on flat and horizontal fillet welds, deep-groove butt joints and insurance code work. Additional development is being carried on and in some cases announcements have been made for all-position electrodes and low hydrogen electrodes.

### Work Better on AC

For all-position work, electrodes must be so coated that slag is reduced and still permit a very short arc. These two requirements in practice, also cut the speed advantage. Attempts are being made to speed up low hydrogen electrodes for welding crack sensitive, higher carbon steels.

Iron powder coated electrodes usually work better on alternating current welders than direct current. Deposition rates are higher with alternating current. With the lower cost of ac welders and the performance of these electrodes on ac, industry has a large cost saving potential. A typical 300-amp dc welder costs about \$506 compared to \$331 for the equivalent ac model.

### STEEL PRICES *Continued*

other steelmaking areas not affected by a local price change in Detroit.

Other manufacturers will benefit as well as automakers in Detroit, but the flat-rolled tonnage consumed by the booming assembly lines dwarfs consumption of others. The auto industry consumes more than 10 million tons of flat-rolled a year, with a dominating percentage of the consumption within the geographic range of Great Lakes pricing policy.

Currently the demand for cold-rolled sheet is at its highest point with probably half the auto industry producing at near record rates. Automotive orders have been the big factor in filling steel sales books on cold-finished sheet through the first quarter and even further in some cases.



"He's afraid of his own shadow."

## GALVANIZED: Continuous Lines Surge

**Production of galvanized sheet is headed for a new record despite steel dip . . . Boom in continuous lines is spectacular . . . First half outlook is solid . . . Build more lines—By K. W. Bennett.**

♦ **AT CAPACITY** operations and with deliveries still extending, galvanized sheet is headed for an all-time record output in 1954. IRON AGE estimates a 1954 output of 2,470,000 net tons by the product's 15 producers, making galvanized sheet a shining standout in a year that has seen most steel mill products slump and first half 1955 looks just as good.

More spectacular is the booming advance of the continuous hot-dip galvanizing line. Conservatively, 75 pct of galvanized output is coming from continuous lines. An estimated 6 pct is coming from electrolytic, though at least one volume producer is careful to point out that electro-galvanized material and hot-dip galvanized are horses of different colors, not particularly competitive, and that the electro produced stock is primarily for painting.

### Building New Lines

Among the six major producers of galvanized, with 1954 rated capacities equalling three quarters of total 3,311,620 ton national capacity at beginning of 1954, at least three are now producing 100 pct continuous galvanized sheet. Armco, one of the pioneers in the use of Sendzimir lines for continuous galvanizing of sheet, has six lines in operation, two of which came into production this year. Inland, first mill to announce a 100 pct switch from conventional pot operations to continuous galvanizing in a May announcement this year, has two lines in operation and will have a third producing by third quarter.

New lines continue to come in. Wheeling, second largest producer of galvanized sheet on the basis of 1954 capacity ratings, put one continuous line in operation in 1953, will bring in a second and more versatile mill in 1955. If it follows the general rule, the new mill will

exceed the productive capacity of the 1953 line.

Bethlehem will have a new continuous line in operation in 1955, has a continuous line at Sparrows Point rated at 84,000 tons annual capacity. Republic is looking forward to second quarter operation of a new continuous hot-dip line and Jones & Laughlin plans to start construction of a continuous galvanizing line in '55. Weirton brought in one line this year, will finish revamping its old No. 1 line in 1955.

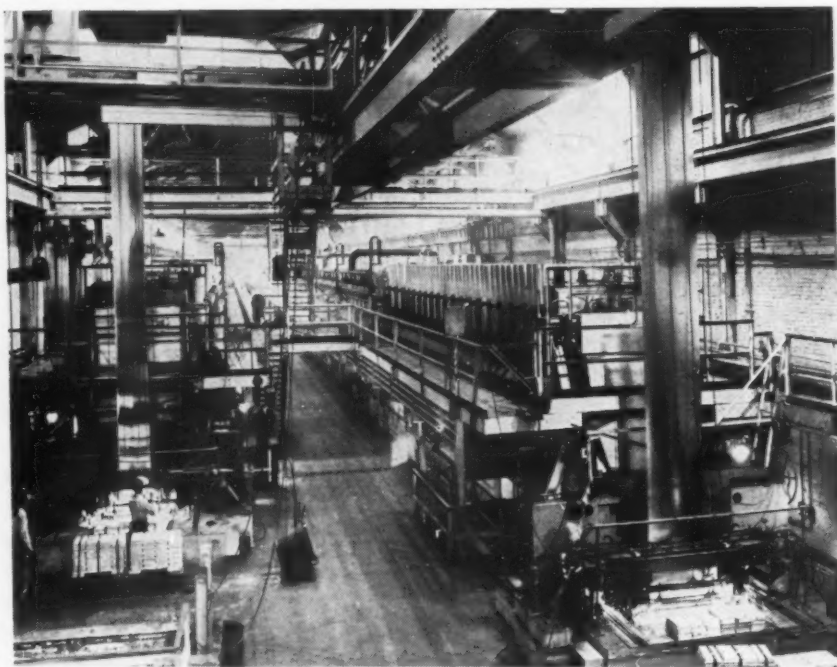
With productive capacity expanding despite the retirement of con-

ventional dip pots, demand has kept pace with the 70,000 to 85,000-ton annual output per line of units already in operation. Sales chiefs in the galvanized department are reporting solid bookings in both eastern and midwestern mills. Conventional galvanized can be procured on slightly easier delivery. For instance, one producer offering both conventional and continuous galvanized can give 4 to 5-week delivery on conventional, can squeeze 10-week delivery on continuous.

At a sales meeting in a regional office last week, salesmen were warned that continuous output for

### Galvanized Sheet Output

Year	Net Tons		
1951	1,986,345	1954	2,470,000
1950	2,273,756	1953	2,348,687
1949	1,795,303	1952	1,996,710



ZINC POTS of Inland Steel Co.'s continuous galvanizing lines.

## FREIGHT CARS: Bad, May Get Better

**Commercial car builders backlogs still in bad shape . . . Now amount to one month of single shift production . . . Hope general business pickup will mean more orders—By G. Metzman, pres., American Railway Car Institute.**

♦ **COMMERCIAL FREIGHT CAR** builders are taking some hope for the immediate future from the overall upward trend of our economy. But current low order and production rates are a major threat to the industry and could have most serious implications for national defense and the economy as a whole.

Backlog of freight car orders on the books of independent car builders had dropped from a high of 113,713 cars on Apr. 1, 1951, to only 8677 cars on Dec. 1 this year. That is about 1 month's production on a single shift operation. New domestic orders in contract shops for the first 11 months of 1954 amounted to only about 13,100 cars—about half of the cars ordered in the similar period of 1952 and 1953 and less than one-fifth of the annual average over the last 10 years.

There is hardly a plant in the

industry that has not been idle for extended periods. Volume of new business has been too low to permit steady production and full employment.

### Expect More Car Orders

It's very doubtful 1955 freight car demand will equal existing capacity. But there is every reason to believe that car orders will be greater than in 1954. Severity of this year's decline is due largely to the dip in railroad traffic accompanying the country's temporary economic adjustment. Freight car loadings during the 48 weeks to Nov. 27 this year were 12.7 pct below the similar period of last year. Average daily freight car surpluses have until the last 3 months been running at 100,000 to 140,000 cars.

Combination of more cars needing repairs, cars retired without being replaced and recent car

loading increases has cut sharply into available car supply. The recent rise shows that a sizable increase in car loadings could quickly result in serious shortages. These in turn could cause diversion of traffic to trucks.

Improved materials handling is creating a greater demand for certain types of cars than for others. Bulk commodities are more and more moving in covered hoppers. With car loadings down this year 12.7 pct below 1953, loadings of covered hoppers during this year were about 518 pct greater than in the corresponding period last year. Shippers are realizing that it is more economical to load free flowing commodities in covered hopper cars.

The box car surplus has been dwindling. Of the 28,200 surplus cars in the week ended Nov. 20, only about 1000 were box cars. In

### GALVANIZED *Continued*

their company was sold out for first half and rationing in third quarter was worth considering. Another producer with an excellent drawing quality continuous galvanized sheet can give 4-week delivery on hot-dipped conventional galvanized, can't do better than second quarter delivery on the continuous galvanized.

To an IRON AGE inquiry, one veteran sales chief answered, "Sure, there may be water in some of these orders. But when makers of barnyard equipment are talking about a backlog of their own, we aren't particularly worried about water in their orders for future purchases of our galvanized sheet."

Continuous galvanized is not unobtainable. Space on one midwest-

ern mill is available for January delivery. But this is exceptional. Most deliveries begin in February, and even these have been extending rapidly. And the difference in lead time between conventional and continuous galvanized indicates no market weakness for conventional coated stock. Volume in this grade is excellent.

A generally strong galvanized sheet market can be attributed to the unprecedented heating and home building markets as well as unexpectedly good farm and appliance sales. The booming demand for continuous can be traced to a strong advance in drawing quality that is permitting the manufacturer to do new things with gal-

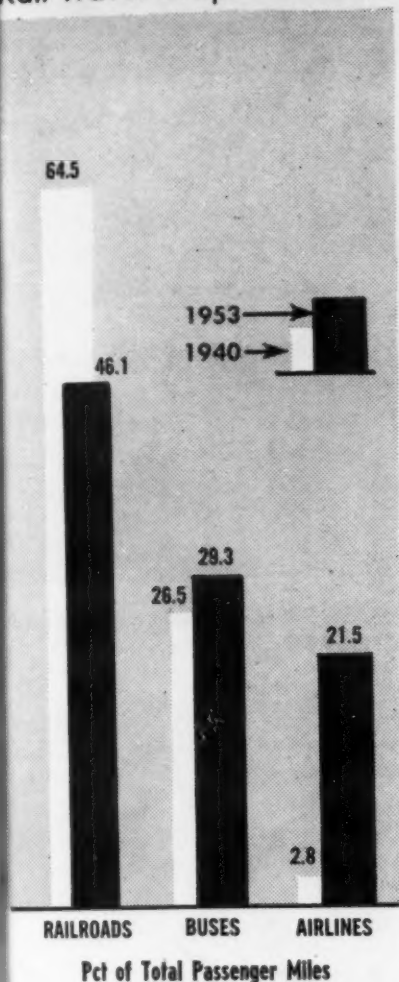
vanized sheets. In the past year continuous galvanized has made strong inroads in the farm and highway markets, for instance, by allowing interlocking 180° bends without coating separations.

Continuous hot-dip galvanized is still gaining capacity. With 22 lines in operation, five more are under construction and will be producing next year. Not tied down definitely, but at least discussed seriously, are another nine. And these figures do not include two major electrolytic galvanizing lines already in operation.

It makes a lot of galvanized sheet. But lot or little, there's consumer demand for all of it in first half 1955.



## Rail Travel Drops



January 1954 the box car surplus was about 10,000 cars.

At its annual meeting on Oct. 12-14 the National Assn. of Shippers Advisory Boards called upon the railroads to enlarge and improve their freight car fleets. Particular stress was placed on the need for 50-ft 6-in. and 40-ft 6-in. double-door box cars with special loading and lading protective devices. Members also stressed the need for steel floor plates to protect cars from damage by lift trucks. They said lack of such improvements results in diversion of traffic to other transportation.

### Piggyback Has Effect

While there is a surplus of about 11,150 gondola cars in the 40 to 50-ft length cars, there is an extremely tight supply of 65-ft cars.

There is now an increasing demand for 60-ft flat cars. And growth of rail-trailer or "piggyback" service is creating a need for 75-ft flat cars to permit the

handling of two trailers per car.

And the railroads must buy at least enough cars to replace those scrapped. Although opinions differ as to maximum car life, 30 years is a fairly historic figure. On that basis replacement should be at the rate of about 60,000 per year. But replacements have been lagging ever since the Thirties. In the first 10 months of 1954 Class I roads retired about 56,700 cars but installed only about 25,500—a loss of about 31,200 cars. Failure to compensate for retirements has raised the average age of equipment. Between 35 and 40 pct of the freight cars now in service are at least 25 years old and over 20 pct are more than 30 years old.

### Need 90,000 Cars Per Year

On the conservative assumption that 1,776,000 cars satisfactorily handled the traffic volume in 1953 and that the railroads hold their present position of about 3900-ton miles per capita annually, the estimated population increase of about 10 pct by 1960 would require an additional 178,000 new freight cars in that period, over and above replacements.

With 178,000 additional new cars needed by 1960, plus 60,000 replacements annually, Class I railroads should buy in the next 6 years at least 90,000 cars per yr. These estimates, based on 1953, make only partial provision for our national defense program. They do not provide for possible return to the railroads of some of the traffic previously diverted to competing transportation agencies, nor do they allow for full mobilization needs.

### Passenger Cars Off Too

The railroads in cooperation with government authorities in July 1950 established a freight car goal of 1,850,000 cars (excluding refrigerator cars) by the end of 1954. Since ownership on Nov. 1, 1954, was only 1,744,800 cars, the roads are still 105,000 cars short—in addition to replacement needs. Thus the 1954 goal will not be reached even by the end of 1955.

Another important phase of the

car building industry problem is passenger car construction. Total passenger car capacity on a single shift basis is 235 coaches per month or about half this number of sleeping cars.

Passenger car orders are also running at a relatively low level and considerably below retirements. Since 1948 orders have averaged only 231 cars against retirements of about 1200 cars annually. Orders during the first 11 months of this year totaled 306. Backlog has dwindled from a peak on Dec. 1, 1946, of 2873 cars to 405 cars on Dec. 1, 1954.

Passenger cars owned by Class I roads and the Pullman Co. declined from a total of 27,682 at the end of 1940 to 22,249 at the end of 1953, a decrease of 19.6 pct. Seriousness of this situation is further illustrated by the fact that 39.3 pct of all passenger train cars are over 30 years old and about 64.5 pct are over 25 years old.

### Building Capacity Cut

The passenger car situation is admittedly less acute than that of freight cars. But in view of the large number of overage passenger cars, the fact that an increase in industrial activity is reflected in an increase in passenger travel and possible requirements for military travel in the event of an emergency, there is a definite need for new passenger equipment.

Meanwhile, car building facilities have been diminishing. In recent years four large plants were dismantled and sold. As of Jan. 1, 1954, the remaining plants had an estimated capacity on a single shift basis to produce about 7000 freight cars per month or about 84,000 per year.

Last year Pressed Steel Car Co.'s Mt. Vernon plant was permanently closed, putting the company entirely out of the freight car manufacturing business. This further decreased capacity by 600 cars per month or about 7000 per year. In an emergency, however, this overall production could be materially increased by multiple shift operation.

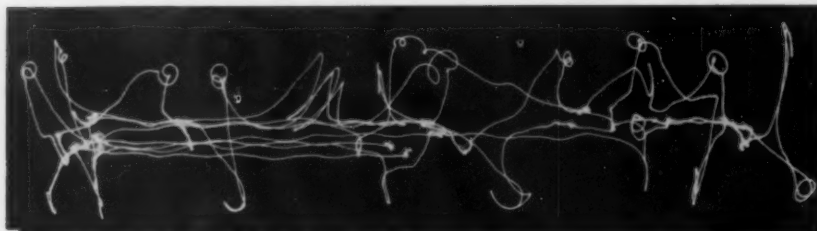
At present five of the remaining 15 plants of various companies are closed for lack of new car orders.

## Cut Drudgery, Raise Output

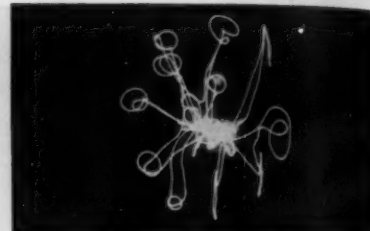
Du Pont does it with pictures—special photographic techniques, that is . . . Pictures spot wasted motion for engineers . . . Show savings of new procedures.



CONTROL panel can be simplified.



LONG, NARROW control room, shown in upper right picture gave this trace when operator was photographed with lights on his wrists.



REDESIGN for smaller space resulted in substantially less motion.

◆ WASTE MOTION is a bugaboo in most industrial plants. You don't have to be told how it creates worker fatigue, reduced efficiency, slower production and higher costs. And tired workers aren't safe workers. But elimination of wasted worker effort is often a tough job because it is so difficult to spot.

E. I. du Pont de Nemours & Co. is using special photographic detection methods that not only spot the unproductive effort but also evaluate the worth of procedures designed to eliminate it.

### Traces Hand Motions

In the first method, a still camera is set up in a darkened room, the shutter is opened and the worker goes through his paces with a light attached to each wrist. As the operation is completed, a flash bulb is fired to show machinery and worker and the shutter is closed.

Result is an actual trace of light showing hand motions on the photograph which can be studied at length by time study engineers.

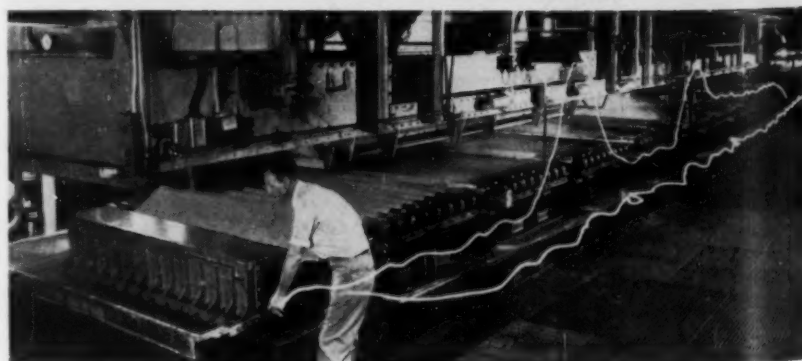
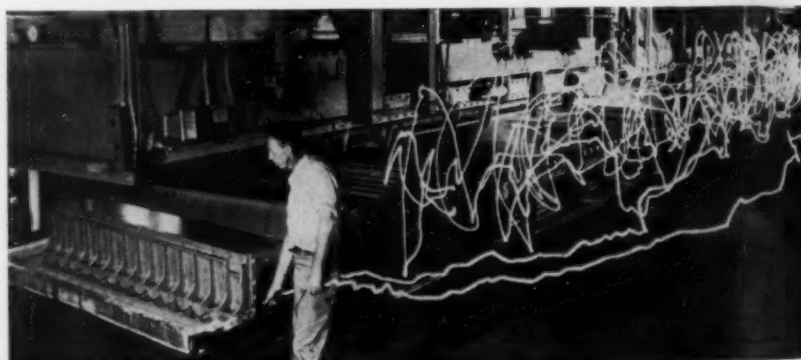
Second technique utilizes multiple flash, again with the camera shutter open as the worker goes through his task in a darkened room. Resulting multiple exposure shows, in a rather blurry way, the

position of the worker throughout the operation. Actually, the less the blur, the less waste motion.

Photos taken by the same method after streamlining the process show precisely how good a job the time study men did—and the improvement is often startling as

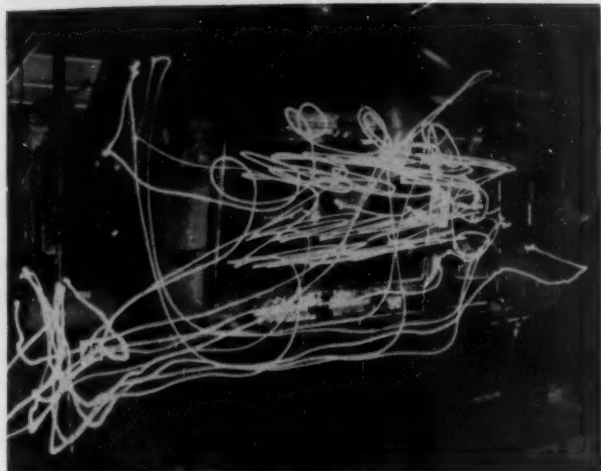
the pictures on these pages show.

Comparisons shown here are all examples of how du Pont has simplified the work of producing cellophane at the firm's Richmond, Va., plant. But the methods of analysis would be just as powerful with any industrial task.



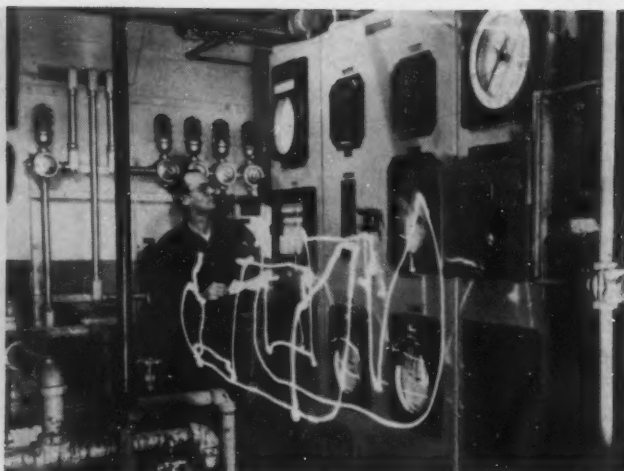
CELLOPHANE casting job is simplified by controls which eliminate hand-dip temperature readings, make start-up six times faster. Light patterns clearly show operator's motions before and after streamlining.

## Before

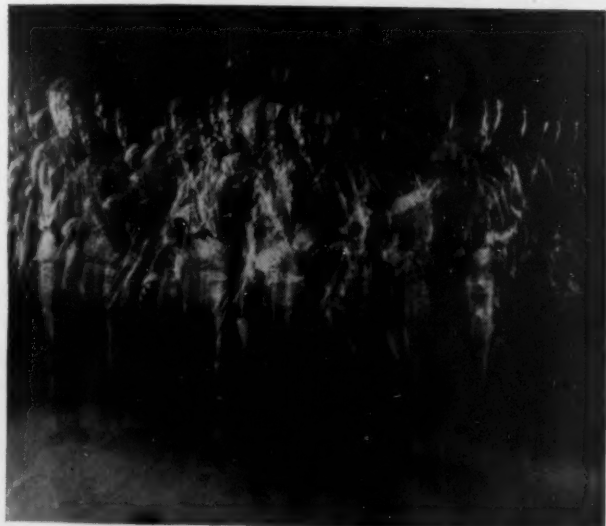


**TEDIOUS** hand scraping after mixing each batch was necessary in adding carbon bisulphide.

## After



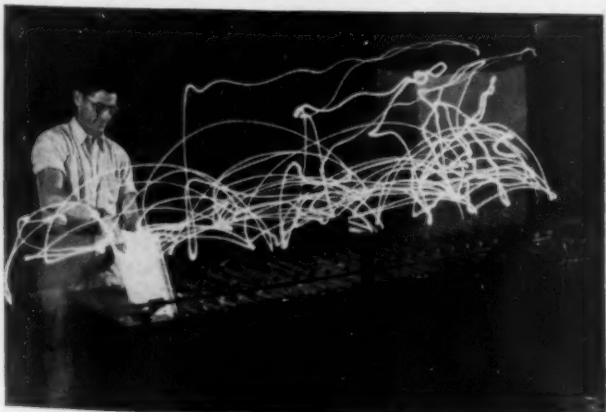
**MODERNIZED** process has worker at controls of equipment that needs no scraping, conserves energy.



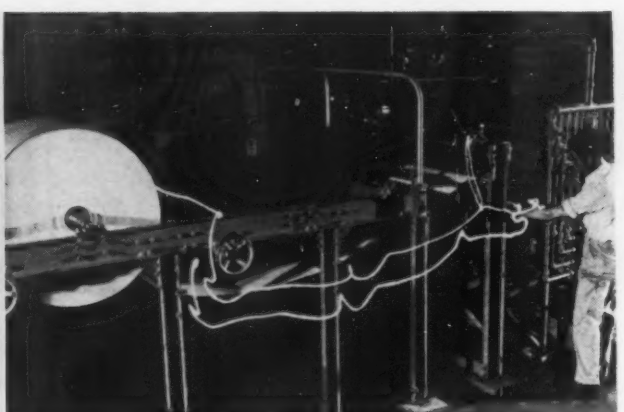
**MULTIPLE-FLASH** technique shows how worker doffing yarn must raise arms above his head countless times.



**STUDY** showed new-way procedure without elaborate, tiring arm motions. Results in less-blurred photo.



**OPERATOR** hand charges and empties press with 175 lb of pulp sheets in old cellulose steeping method.



**MORE WORK** with less fatigue is accomplished with crane-loaded machine using 580-lb pulp roll.



## Chicago:

**New plant spending will hit \$235 million this year.**

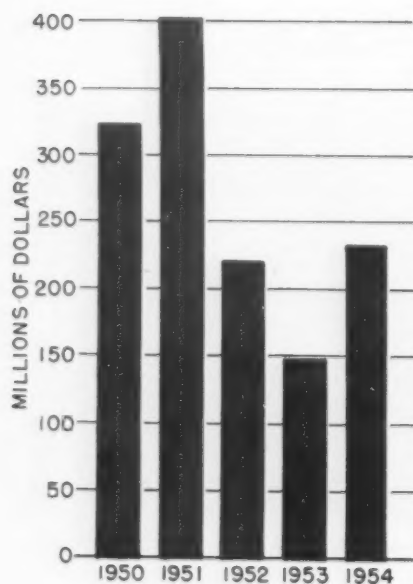
Chicago's industrial boosters were noting with considerable pleasure the total outlay for new plant will reach \$235 million in 1954. The total was the third highest in the post-World War II period, exceeded only by the \$325 million total of 1950 and the \$402 million total of 1951.

In the two latter years, local industrial expansion had been boosted strongly by an estimated \$251 million outlay by the steel industry. This year steel, chemicals, and petrochemicals again led in expansion rate with Republic and Inland Steel notable for strong investments.

### Industry Only

The tabulation, made monthly by the Chicago Assn. of Commerce & Industry, covers industrial outlay only, didn't include such mammoth projects as the Prudential Building, a mammoth underground Michigan Avenue parking lot, five others erected above ground.

### Chicago Plant Investment



Despite the comparatively high building expenditures, structural fabricators in the area have found competition strong, as have reinforcing bar users. And last week structural producers in both standard and heavy were reporting the usual winter slowdown beginning to drag at sales. Rebar and wire reinforcing mesh were moving in good volume, but veterans figured that the Midwest, on a price basis, was about twice as competitive as the East (easterners will deny this).

The apparent answer: a few large projects, not enough small ones.

### Lincoln Pays Bonus

The unique incentive management operation of Lincoln Electric Co., Cleveland, paid off again last week when the firm announced a \$4.4 million year-end incentive bonus pay for the 1161 employees. Average pay of hourly workers there including this year's bonus is over \$8,000—one of the highest in the U. S. An additional \$520,000 worth of retirement annuities for employees was also purchased.

## Bars:

**Phoenix merchant mill ready for capacity operations.**

Phoenix Mfg. Co., Graver Tank subsidiary, indicated last week that its 150,000 ton annual capacity merchant bar mill was ready for full capacity rollings. Coupled with a 30-ton-per-hour preheating furnace, the Flinn & Drefflein mill offers seven stands, will eventually have an additional pair of 20-in., 2-high and 3-high stands which will roll up to 4 in. rounds and angles and channels to the same dimensions.

The Phoenix equipment marks a step away from the trend toward continuous equipment, is aimed at a merchant market with a wide product variety and quick interchanges of the rolls. Phoenix is proud enough of its new property to call it the "most modern merchant bar mill in existence."

Indicative of future expansion is provision for space to allow addi-

tion of four 16-in. 2-high breakdown stands between the original 20-in. breakdown rolls and the four intermediate stands already in place. Repeaters on the intermediate stands can move laterally for bypassing during "reversing" operations. Turners for handling flats and ovals are geared to electric eyes.

Replacement of stands in place on the mill line, with a new set of stands equipped with rolls for the next rolling operation, is done with a 15-ton crane, cutting downtime to a minimum. A double flying shear cuts bar stock to correct length, and finishing speeds up to 2100 ft per min can be maintained. The shear, repeaters and reversing units were built by Birdsboro Steel Foundry & Machine Co.

Size ranges will run from  $\frac{3}{8}$  in. to a  $\frac{1}{2}$  in. on rounds, squares, and hexagons; angles from  $\frac{3}{4}$  in. to 3x3 in.; and flats and special shapes from 1 to 4 in.

## Stockholders:

**Battle to take over control of A. M. Byers Co.**

Fight for control of A. M. Byers Co., 90-year-old Pittsburgh wrought iron producer, looks like it might wind up in the courts if an opposition group succeeds in unseating present management.

Counsel for incumbent management intimated at a press conference prior to an informal stockholders' meeting in Pittsburgh that efforts of an insurgent "stockholders' protective committee" to take over the company raises certain questions of legality.

The dissatisfied stockholders have demanded a special shareholders meeting for the purpose of unseating present officers and directors. They claim to represent the necessary 20 pct of common shares to do just that. But Byers' management is sitting tight, has "not decided" whether to call the special meeting. It's admitted the insurgents could call their own meeting but any action taken would be subject to legal questions, according to company counsel.

At any rate, a showdown will

## STANDBYS: See Need Fading

**OPS, OPA veteran now heads stabilization program . . .  
Calls main job "policy setting" . . . Freeze is temporary measure  
which must be thawed . . . Set up industry task group.**

not be long in coming. Under company by-laws, the call for a special meeting must be made by Jan. 1 to permit a meeting to be held Jan. 15. The company's regular annual meeting is scheduled for Jan. 27.

The stockholders' committee contends the company needs new management to put it back on its feet. But A. B. Drastrup, president, says present management is fitted to do the job better and he proposes a \$2 million expansion and modernization program to get underway as soon as financial arrangements can be made. He says the mysterious insurgent group's activities are hindering the company in this and other respects.

The move to take over the company has been underway for several months.

### Ore:

#### Kaiser, U. S. Steel dispute California deposits

There is renewed speculation among steelmen on the West Coast whether U. S. Steel Corp. will build a fully integrated plant in California, first reported in THE IRON AGE (June 10, 1954, p. 77).

Since October, U. S. Steel has been drilling and sampling the desert near Eagle Mountain, Calif. This is the source of ore for Kaiser Steel Corp.'s Fontana Works, the only integrated steel plant now on the Coast.

Steelmen say it would be a natural for U. S. Steel to build a plant within easy reach of ore and markets. Only company officials have the answer, and they're not talking. So much may depend on the outcome of a pending court case.

#### Wrangle in Court

Here's how the wrangle started: U. S. Steel staked out some 120 claims covering over 1700 acres next to Eagle Mountain mine. The company says Kaiser employees then drilled exploratory holes on their claims. U. S. Steel got an injunction to keep them off. Kaiser Steel got it lifted, saying it's "open land." U. S. Steel is suing for \$25,000 damages and a permanent injunction. Kaiser is expected to file an answer soon.

◆ **POSSIBILITY** that the Eisenhower Administration will ask for standby powers to clamp a freeze on prices, wages, rents, and credit during the new congressional term is apparently reduced by the appointment of Edward F. Phelps, Jr., experienced stabilization planner, to head the program.

Mr. Phelps, who served in federal control headquarters during both World War II and Korean War is not against having the standby legislation on the books. But he believes the task of readying the stabilization program for an emergency is still far too important—and too little advanced—to use time and manpower trying to muscle such a measure through Congress.

#### Freeze Must Thaw

Main job confronting the stabilization planners now, the new chief says, is that of working out the basic policies under which controls would be operated in the various kinds of emergencies—off-shore war, attack, or a limited

"police action." While it is not a secret that legislation providing for a 90-day freeze and a program for a general freeze are completed, these are stopgap measures, Mr. Phelps points out.

"The freeze must be thawed eventually," he says, "because it is an unworkable instrument except for the shortest periods of time."

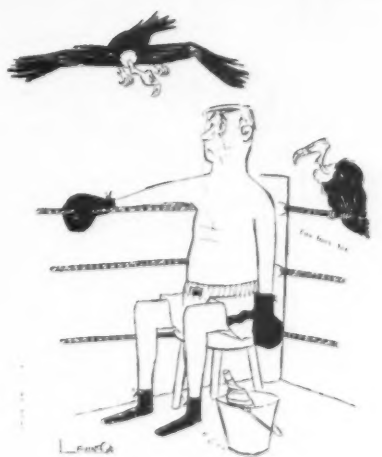
His efforts will be to establish a policy which will govern how the freeze will be broken—a basic policy for permitting business more or less profit; labor higher or lower wages; agriculture higher or lower prices, and the consumers more or fewer goods.

#### Need Speedy Action

To supplement his small staff, Mr. Phelps is setting up a special task force of businessmen who formerly worked with him at OPA and OPS and persons with whom he has come in contact as a trade consultant in New England area. Nucleus of the task force are Harold S. Vance, executive committee chairman of Studebaker-Packard Corp., and James F. Brownlee, partner of J. H. Whitney Co., both of whom are now serving as government consultants.

Some top staff planners in the government are convinced that the White House should have standby power to invoke a freeze arguing that in the atomic age the country's economy could be in shambles before slow moving legislative processes could be completed.

Others—and Mr. Phelps is inclined to this view—argue that the President, under his general war powers which permit him to take almost unlimited action in a national emergency, could invoke the already-prepared temporary



## DEFENSE

freeze until Congress could meet. While legal experts are not entirely in accord that stabilization falls within the war powers, those that believe it does seem to be a majority.

Another offhand comment of the new stabilization chief is that in event of a national emergency, stabilization duties, now a part of the Office of Defense Mobilization, should become a temporary independent agency, rather than a branch of some other agency.

## UMT:

**Modified proposals may pass in 1955.**

Chances are now good that Congress will pass some type of universal military training program in 1955, probably along the lines of President Eisenhower's compromise plan.

A leading opponent of UMT, Rep. Dewey Short (R., Mo.), outgoing chairman of the House Armed Services Committee, recently relaxed his opposition after the President made his watered-down proposal.

Basis of the proposal is that a corps of 100,000 young men a year will be added to an organized reserve in addition to the normal 2-year draft service, taking about 23,000 men a month.

### Need Trained Reserve

Under the proposal, men would be subject to the draft when they become 18½. But before they reach that age, they could voluntarily sign up in the UMT plan, be trained for 6 months, and agree to serve in a reserve unit for 6 years, with threat of induction into the active service if they fail to attend regular drills.

Pentagon leaders, who will try for a 4-year extension of the present draft law in addition to the UMT proposal, believe that a large trained reserve, not made up of veterans, is a necessity in the cold war.

## Spots Enemy Mortars

American military forces are being equipped with a new electronic device which aids in locating and destroying enemy mortars.

Identified as the counter-mortar radar AN/MPQ-10, this device was designed and developed as a joint project of Sperry Gyroscope Co. and Army Signal Corps.

Six major components of the locator, including elevation and range computers, are mounted on a modified gun carriage which is towed to points near front-line positions. With the device in position, the operating crew can detect and track the trajectory of incoming shells to locate the enemy mortars.

This information is relayed to an artillery fire direction center, which then brings fire to bear on the enemy position.

## Let Reactor Contract

American Locomotive Co. will build and test a prototype "package" atomic power plant for military use under terms of a new government contract for about \$2 million.

The accepted bid for the lump-sum contract was the lowest of 18 offered. Cost of the contract is to be shared by Atomic Energy Commission and the Army.

The Army package power reactor (APPR) will be built at Ft. Belvoir, Va. It is expected to have a 2000-kw capacity and will be the prototype for transportable plants with components which can be moved by plane.



"Know something? This whole thing is contrary to the principles of aero dynamics!"

Design of the APPR is based on studies by the Oak Ridge National Laboratory. It is viewed as particularly useful at remote bases, because it would not have to be supplied with space-consuming conventional fuels.

## Name 3 to BDSA

New executive appointees in the Business and Defense Services Administration are Russell C. Flom, Menasha, Wis., as an assistant administrator; Raymond O. Bell, West Allis, Wis., as director of the Electrical Equipment Div.; and Everett O. Clark, Birmingham, Mich., as director of the General Industrial Equipment Div.

## Richmond:

**Adds Birdsboro to his growing metalworking empire.**

The venerable name of Birdsboro Steel Foundry & Machine Co. is the latest to be added to the list of metalworking firms in the growing Richmond empire.

Frederick W. Richmond, New York financier, bought the firm's assets late last week for \$3,970,000. Mr. Richmond will be chairman of the board of the firm which will be known as B.S.F. Co. G. Clymer Brooke will continue as president of the new firm. Present line of products will continue.

Meanwhile, it appeared the way had been cleared for completion of the sale of Follansbee Steel facilities by Mr. Richmond to Cyrus Eaton, Cleveland financier. Court order which was to have blocked the sale to Richmond has not been issued. And Mrs. Aline Warner, a prospective buyer from Greenwich, Conn., has withdrawn her offer. Mr. Eaton will operate the facilities in Follansbee.

## Contracts Reported

Including description, quantity, dollar values, contractor and address. Italics indicate small business representative.

Starboard non-magnetic minesweeping crane, 58, \$269,978, Western Gear Works, Seattle, Wash.

Public address set, 697, \$222,750, Audio Equipment Co., Inc., Great Neck, N. Y.

Repair parts for diesel engine, 234130, \$207,071, Detroit Diesel Engine Div. General Motors Corp., Detroit 28, Mich., J. E. McKenna.



## Report To Management

### You Can Forget About Corporate Tax Cut

Any chance the cut in corporate and excise taxes scheduled for Apr. 1 might have had of going through has been definitely scotched. Prospect that the \$2.2 billion tax reduction would be allowed never has been very promising, was further chilled by the Democrats' November election victory. Last week it received the coup de grâce when the President indicated he would ask for extension of these taxes when he addresses Congress in January.

And you can figure it will be at least several years before these taxes are rolled back—if ever. Now that unbalanced budgets are no longer the personal property of the Democrats—there's no chance the budget will be balanced during the rest of Ike's term—this type of tax cut is out. It represents too much of a loss of revenue, and in addition it doesn't have much voter appeal.

### Tin Price Hike Coming

You can expect tin prices will be upped (probably 3¢ to 4¢ per lb) by the time the International Tin Agreement goes into effect. This may be some time in March.

Set up to stabilize tin prices, the Tin Agreement calls for an agency representing the tin producing nations to buy when the price of tin dips below 93.5¢ per lb at New York and to sell its buffer tin stocks when the price tops \$1.035 per lb. Price right now is 90¢ per lb and has shown remarkable stability in recent months. Supply continues in excess of demand so prices will probably remain near the 90¢ per lb level until shortly before the Tin Agreement goes into effect and the international agency starts buying to jack up the price.

### Watch the Records Break

The business upsurge which has been going strong for several months—despite all the talk there has been about "sideways movement"—is finally beginning to show up in the statistics.

The *New York Times* Weekly Index of Business Activity reached the highest point in its 29-year history during the first week in December. And Federal Reserve Board's adjusted industrial production index for November hit 129, high for the year and a gain of 3 points over October. It marked the first time this year that industrial output matched year-ago levels.

Big factors pushing the FRB index were the marked improvement in the steel and automotive industries. Household durable goods also showed substantial gains in production and there was some advance for building materials and most types of non-durable goods. A sharp increase in auto sales after the new models were put on the market was largely responsible for lifting the retail sales index 2 points from the previous month.

And another new record was set recently when weekly electrical output climbed to 9.846 billion kwh. This is 13.7 pct above year-ago levels, represents the biggest gain during 1954.

### If the Price Is Right

Westinghouse's Gwilym Price is prone to be bullish—he's also prone to be right. Last year about this time he said sales billed by Westinghouse during 1954 would be the highest in the company's history. Last week, in his year end statement he reported that during the year Westinghouse had shipped more than \$1.6 billion worth of products, topping the company's all-time record established in '53.

For '55 he expects sales billed to just about equal the '54 record; predicts orders will be up about 10 pct from last year. And for the long term: he believes air conditioning sales will increase 1000 pct during the next 10 years; says 50 pct of new homes built in the next decade will have central air conditioning; thinks production of electric appliances during the next 5 years will be about 27 pct above the record breaking appliance output pace of the last 5 years.

## INDUSTRIAL BRIEFS

**Enters Field . . .** ElectroData Corp., Pasadena, Calif., recently displayed a new Magnetic tape transport unit at the Eastern Joint Computer Conference in Philadelphia. The display marked the entry of the company into the field of computer and data processing systems component and accessory manufacture.

**To Build . . .** Armco Drainage & Metal Products, Inc., Middletown, Ohio, plans to build a new \$300,000 fabricating plant at Topeka, Kans., that will replace its present plant there and double the company's production of corrugated metal pipe in the Kansas-Missouri area.

**Will Make Half . . .** Union Steel Castings Div., Blaw-Knox Co., Pittsburgh, will make half of the cast steel turrets for Army medium tanks to be produced in 1955.

**Gets Contract . . .** Allis-Chalmers Mfg. Co., Milwaukee, has been awarded a contract by the U. S. Navy Purchasing Office, New York, for four large aircraft carrier condensers.

**Constructing . . .** Servomechanisms, Inc., is constructing a new building at 12500 S. Aviation Blvd., at the Los Angeles International Airport. The new building which is expected to be ready for occupancy next spring and will replace five smaller buildings now being used by the company in El Segundo, Calif.

**It's Official . . .** White Motor Co. officially opened its new \$500,000 truck sales and service headquarters in Pittsburgh's northside at 1136 Western Ave.

**Formed . . .** Atomic Industrial Forum, Inc., has formed an industrial Nuclear Reactor Materials

Committee. The committee could be instrumental in furthering the industrial development of reactors.

**New Prexy . . .** Investment Casting Institute elected Ted Operhall of Misco Precising Casting Co., Whitehall, Mich., as its president at the Institute's annual fall meeting in Chicago last month.

**New Division . . .** GMC Truck & Coach Div. of General Motors Corp. has established a new fleet division for truck sales to be headed by A. S. McEvoy.

**Plant Completed . . .** Wesson Metal Corp. has completed its new 40,000-sq-ft cemented carbide metals plant in Lexington, Ky.

**New Company . . .** Printed Circuits, Inc., 36 Tunxis Ave., Bloomfield, Conn., has been formed to design, engineer and manufacture all types of printed circuit boards.

**Plans Move . . .** N. T. Gates Co. plans to move on Jan. 1 from its present offices in the Drexel Bldg., Philadelphia, to its own recently completed building in Camden, N. J.

**Merit Award . . .** Load-Mobile Fork Truck, outstanding product of Market Forge Co.'s Materials Handling Div., Everett, Mass., has won an Associated Industries of Massachusetts Merit Award for new and improved production of distinction manufactured in Massachusetts during the past 2 years.

**Appointed . . .** Hydraulic Press Mfg. Co., Mount Gilead, Ohio, has appointed the Norman Engineering Co., 2115 W. Marquette Rd., Chicago, as representatives for its Hydraulic Power Div. line of products.

**Elbow Room . . .** Robertshaw-Fulton Controls Co. opened new, larger quarters at 8406 W. McNichols Rd., Detroit, for its sales representatives. The office was formerly at 2680 West Grand Blvd.

**First Place . . .** The Johnstown, Pa., plant of National Radiator Co. has received a first place award in the 1953-54 safety contest sponsored by the Metals Section of the National Safety Council.

**Dividend . . .** M. A. Hanna Co., Cleveland, has declared a dividend of 50¢ a share on common stock, payable Dec. 14 to stockholders of record at the close of business Dec. 8.

**They've Moved . . .** Samuel G. Keywell Co., Inc., Detroit, moved to a new office building adjacent to scrap yard at 3079 Lonyo Rd.

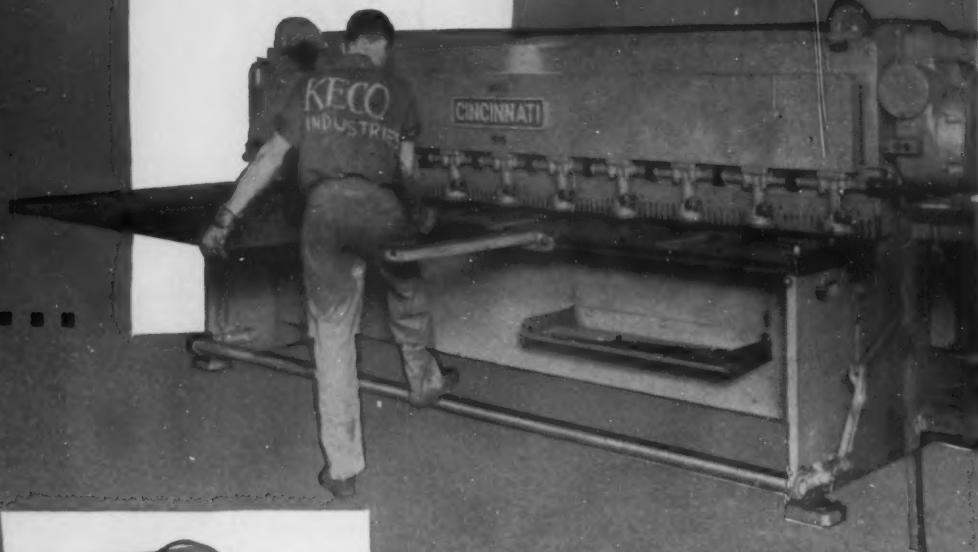
**Hear Ye . . .** U. S. Steel Corp. reports that Lukens Steel Co., Coatesville, Pa., has been licensed to manufacture "T-1" constructional alloy steel.

**All-time High . . .** National Tool & Die Manufacturers Assn. membership has reached an all-time high of 928 companies. During the past year, more than 200 applications for regular membership were obtained.

**Elected . . .** D. T. Wellman, president of Wellman Bronze & Aluminum Co., Cleveland, was elected president of The Magnesium Assn., New York.

**Distributor Appointed . . .** Parker Appliance Co., Cleveland, has appointed Metropolitan Supply Co., 353 E. Second St., Los Angeles, as authorized distributor of Hoze-lok fittings and hydraulic hose assemblies.

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Write for Cincinnati Shear Catalog S-6 and Cincinnati Brake Catalog B-4.

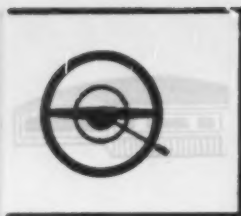


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## Buick Transmission Beats Compromise

**New, variable-pitch Dynaflo provides fast pickup when needed, gives much better gas mileage at cruising speeds . . . Development cost went into millions . . . Took three years to perfect—By R. D. Raddant.**

♦ A BIG STEP toward licking the characteristic compromise between efficiency and performance in a torque converter transmission has been made at Buick with the new variable-pitch Dynaflo.

The variable pitch, the only development of its kind in the industry, changes the angle of the stator blades to provide the best possible performance for acceleration and maximum economy at cruising ranges.

**Boosts Pickup . . .** It has cut nearly a second off the time it takes to accelerate a 1955 Buick from 40 to 60 mph and ½ second off the time to accelerate from 0 to 40 mph. At the same time, economy has been increased in normal driving conditions where sudden acceleration is not needed.

In a torque converter, the stator member is imposed between the turbine member and the pump, or input member. It reverses the direction of the spinning fluid causing it to travel in the same direction as the pump. Its addition changes a fluid coupling into a three-element torque converter.

**Eliminates Compromise . . .** Obviously, the single-position stator is a compromise between performance and economy. By varying the pitch from maximum performance position to one of near maximum economy, this compromise has been nearly eliminated. In fact, a constantly varying stator was considered but abandoned because the increased benefits were negligible over the two-position stator now in use.

It also provides an illustration

of how far automakers will go under today's competitive conditions to improve performance. This one improvement cost into the millions to tool and is a much more expensive part to manufacture in addition to the cost of the combination mechanical and hydraulic mechanism that moves the blades.

**Has Compact Mechanism . . .** The former stator had blades in a fixed position and was relatively simple to manufacture. On the new stator, each of the 20 extruded aluminum blades has its own shaft with an upset crack end. The end of the crank is set into a groove in a central piston. As the piston moves in or out, it turns each crank moving each blade simultaneously through nearly a 90° arc from one position to another.

The piston is actuated by a mechanical hydraulic mechanism. There is a mechanical connection from the throttle linkage to the transmission. This actuates a valve

which directs oil into an opening in the stator piston. This oil, fed under pressure behind the piston, pushes the piston out and puts the stator blades into the low angle.

**Controlled by Throttle . . .** Rudolph J. Gorsky, staff engineer, transmission section at Buick, explains that at part throttle, the stator blades are in the angle position. But when the driver presses the accelerator past the detent field, the stator control valve is shifted so oil behind the stator is exhausted.

Then another line presses oil under pressure into the converter. That acts on the outside face, pushing the piston in and pushing the stator blades back into the high angle.

**Possible on Others . . .** This is an overly simplified explanation, but it should at least give an idea of how the variable pitch Dynaflo works and a little of the problems involved in taking this important step.

It is conceivable that any torque converter can employ a variable-pitch stator. However, each automaker has its own package and each must be considered by itself.

This particular step in Dynaflo evolution took about three years. The principle was known, but the problem was to develop a suitable design that could be manufactured with parts that could be made economically and still meet durability tests.

AC Spark Plug Div. of General Motors now makes the blades and crank assemblies. All other parts and final assembly is at Buick.



"This ends the back-seat driver problem."

## To our Favorite Boss!

From the receptionist at the front door through to the last man on the loading platform—all of us here at Great Lakes Steel have a very important *something* in common. It is the knowledge that your continued and expanded need for our products determines the future and growth of every one of us, regardless of our individual jobs here.

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That's why we at Great Lakes are seeing to it that our steel is the kind you have a right to expect from a specialist in flat-rolled products. We know the importance of prompt shipments, top quality, proper packaging and loading, dependable information, and clerical accuracy. We think you'll agree that our many satisfied customers are a pretty good indication that this policy is good business for all concerned.

Next time you have a problem in steel, call on one of our representatives to help you solve it. You'll be glad you did!

### Great Lakes Steel

Ecorse, Detroit 29, Michigan

PRODUCERS OF N-A-X HIGH-TENSILE STEEL



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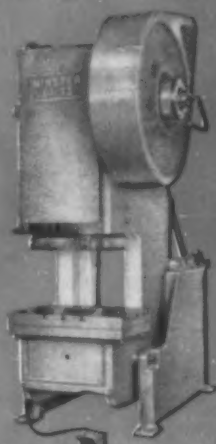
SALES OFFICES IN BOSTON, CHICAGO, CINCINNATI, CLEVELAND, HOUSTON, INDIANAPOLIS, LANSING, LOS ANGELES, NEW YORK, PHILADELPHIA, PITTSBURGH, ROCHESTER, ST. LOUIS, SAN FRANCISCO AND TORONTO

December 23, 1954

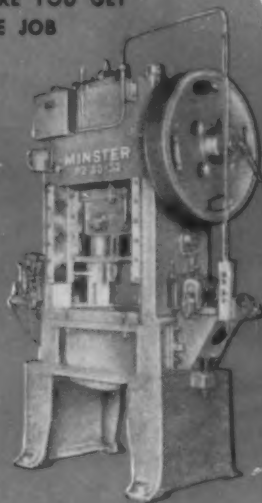
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# Automation:

**Industry is not worried  
by UAW's objections.**

The auto industry has not been driven into a panic by new emphasis and some thinly veiled warnings on automation by the United Automobile Workers (THE IRON AGE, Nov. 25, 1954, p. 51).

There has been no attempt to soft-pedal publicity on automated plants and production facilities or to curtail plans for further automation of manufacturing processes.

## Not All Bad

For one thing, the UAW has not specifically said that it is against automation per se, only expressed fear that the day might come when it could cause unemployment by eliminating jobs. The union is still committed to the philosophy of bettering the standard of living through technological improvement.

Furthermore, while the UAW may look somewhat apprehensively at long engine lines run by few human hands, members working in the new automated plants have no desire to become human turntables again.

## A Bargaining Factor

This does not mean that automation will not become increasingly important at the bargaining table. An attempt to establish new job classifications and wage rates for automated jobs will be a significant point. A point which the UAW says it will not have arbitrated, but insists on settling between the union and employer.

There is little evidence, however, that the UAW will actually oppose specific installations of automation equipment.

Nevertheless, there is bound to

be some reaction on the part of management to the threat of union resentment. Some manufacturers who are undecided whether to automate a specific job may decide to wait for further developments. However, it is significant that the big automakers, those most affected, are not holding up.

# Engines:

**V-8 demand tops expectations  
at Plymouth and Chevrolet.**

The unofficial word from Plymouth and Chevrolet is that both automakers guessed wrong on percentage of 6's against V-8's. The result is that both have somewhat of a production problem satisfying dealer and customer demand for their new V-8 engines.

Even before the introduction of Chevrolet's new engine, it was rumored around Detroit that a split had developed in top management over which engine to emphasize, both in promotion and production schedules.

Some telephone queries of Detroit dealers indicate that the demand for Chevrolets runs 60-40 in

## AUTOMOTIVE NEWS

favor of V-8's. Demand for V-8 Plymouths is even greater—three-to-one in some cases. Original production estimates called for about 50 pct of each engine type at Chevrolet, but well over 60 pct of 6's at Plymouth.

## Built V-8 Backlog

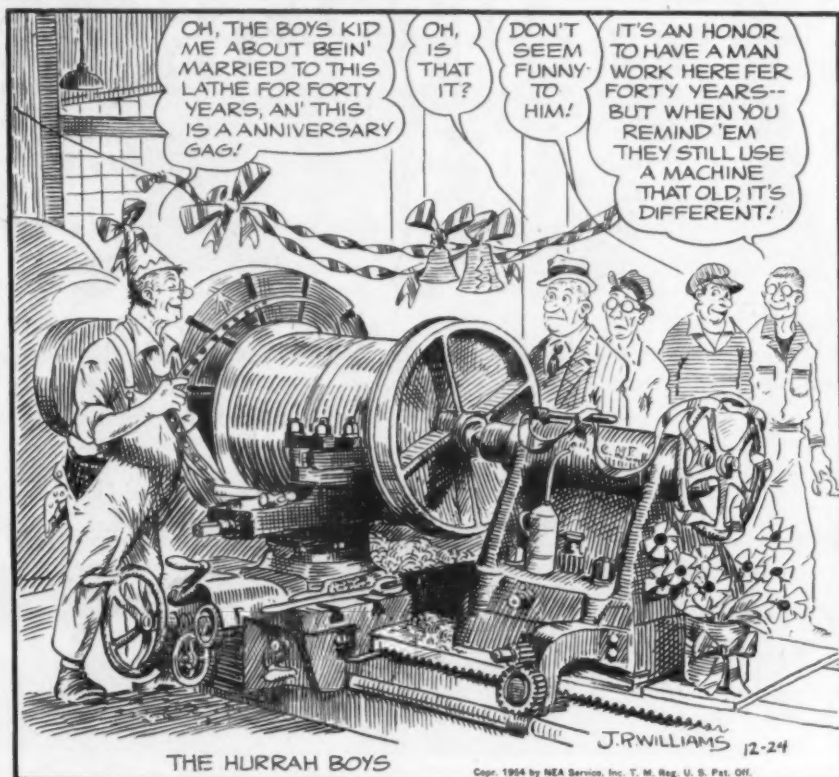
However, Plymouth management had the foresight to build up a backlog of V-8's to guard against the possibility of a heavy run of the new engine. To date, dealers have been able to fill their needs.

Another factor enters into the Plymouth production picture, however, and that is its tremendous volume of fleet sales. Few, if any, taxi fleet orders have been placed for V-8 powered cars. This will level off the topheavy demand for V-8's coming from individuals.

The present situation at Plymouth, of demand exceeding supply, is a refreshing one, after two seasons of poor sales results. It has resulted in problems, of course, but of shortage, not oversupply.

## THE BULL OF THE WOODS

By J. R. Williams



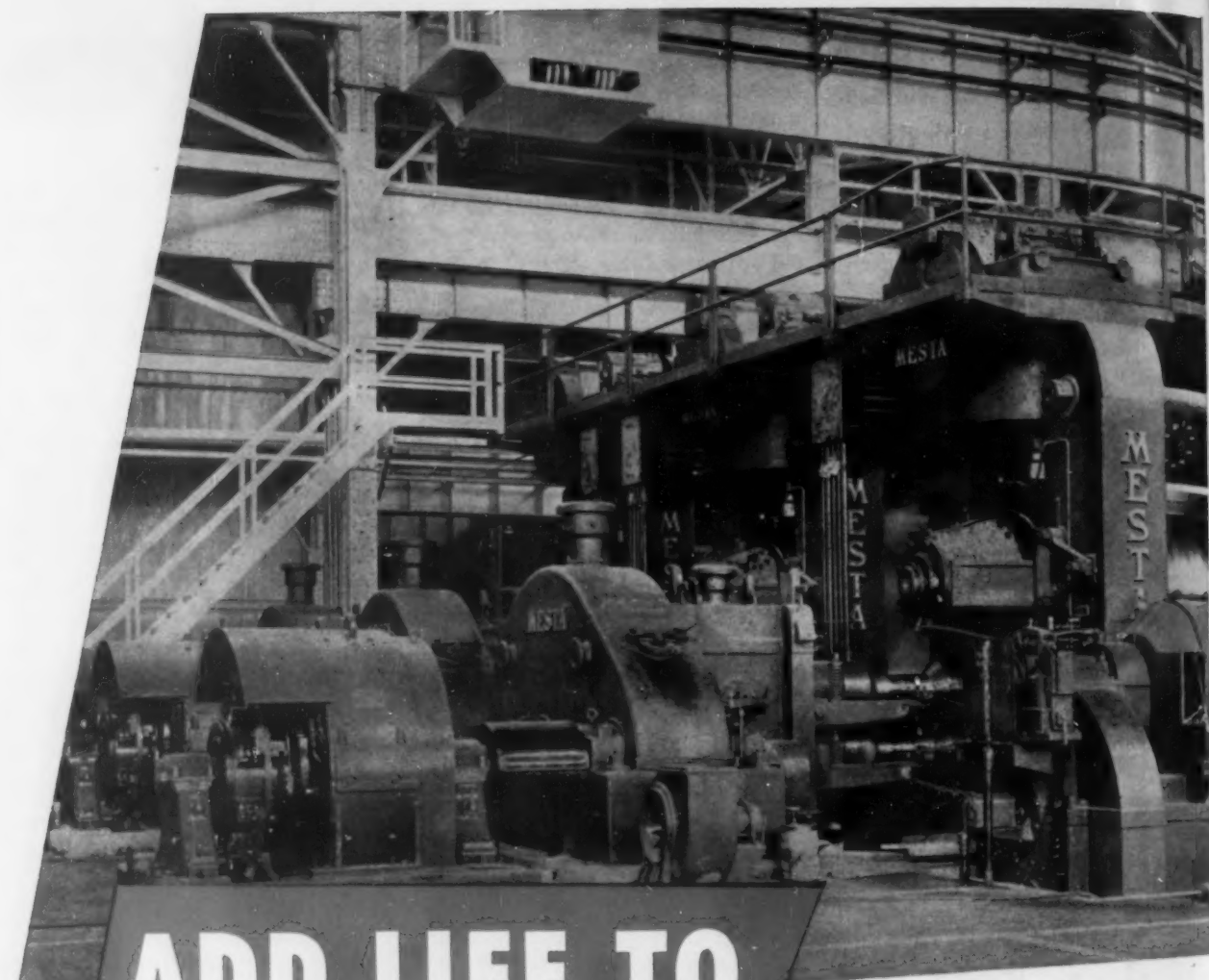
## Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS
Dec. 18, 1954	155,499*	22,458*
Dec. 11, 1954	153,296	22,779
Dec. 19, 1953	104,621	27,472
Dec. 12, 1953	91,857	21,288

\*Estimated. Source: Ward's Reports

December 23, 1954



# ADD LIFE TO REDUCTION GEARS...

**USE** *Texaco Meropa Lubricant* and enjoy the advantages of greatly extended life for your enclosed reduction gears . . . smoother operation . . . less maintenance expense.

*Texaco Meropa Lubricant* has improved EP characteristics designed to carry the heaviest

loads. It has outstanding resistance to oxidation and thickening. It does not foam, does not separate, is not affected by moisture, and is non-corrosive to bearings.

For oil film bearings on back-up rolls, use *Texaco Regal Oil*. A heavy duty, turbine-quality oil, it prevents oxidation and sludging, keeps circulating systems clean. Bearings get full protection, and you can count on lower maintenance costs.

A Texaco Lubrication Engineer can help make your lubrication more effective. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:



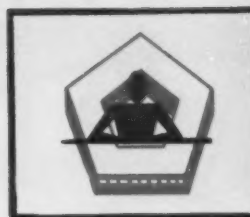
The Texas Company, 135 East 42nd Street,  
New York 17, N. Y.



## TEXACO Meropa Lubricants

FOR STEEL MILL GEAR DRIVES

TUNE IN: TEXACO STAR THEATER starring JIMMY DURANTE or DONALD O'CONNOR, on TV Sat. nights. METROPOLITAN OPERA radio broadcasts Sat. afternoons.



THIS WEEK  
IN  
WASHINGTON

## Won't Cut Corporation Tax Rate

Washington sees approval of President's request for extension of 52 pct corporate tax rate . . . Act to head off automatic cutback to 47 pct . . . Democrats talk of boost to 55 pct—By G. H. Baker.

♦ **CORPORATION** income is to be taxed for at least one more year at the high wartime rate of 52 pct, instead of at 47 pct as planned. A check of opinion at the Capitol shows that President Eisenhower's request for an extension of the high rate probably will be approved.

Advance word from the Treasury indicates that the problem of beating federal spending into line with income is more serious than had been thought. Plan now is to plug all revenue leaks.

Treasury Secretary George M. Humphrey will make a formal request of Congress next month to head off the scheduled reduction of 5 percentage points that's slated for Apr. 1, and to extend the existing rate of 52 pct for at least 12 months beyond Apr. 1.

**See \$1.2 Billion Loss . . .** If Congress fails to act on such a request, the tax rate (which applied to all corporation income) will automatically fall to 47 pct. Affirmative action is necessary, in the Treasury's opinion, to prevent a loss of revenue that may run as high as \$1.2 billion. This loss estimate is based on high Korean war corporate income. Actual loss today would be much less—probably closer to the \$1 billion mark.

There is talk among some Democrats in Congress of increasing the corporate rate to 55 pct. Such a move would stir up plenty of opposition—from conservative Democrats as well as Republicans. Rate of 52 pct is regarded as the ceiling, barring war or all-out emergency.

**Can Help Industry . . .** In the two years that the Eisenhower Administration has been in office, Secretary of Commerce Sinclair Weeks has demonstrated in a series of positive, hard-hitting reforms that the U. S. Dept. of Commerce can—when it wants to—function as an efficient and useful counselling service in guiding business and industry.

Mr. Weeks' program of getting the Commerce Dept. back on the business map has not been "put over" easily. He and his staff have won a back-breaking battle

with the Budget Bureau, the appropriations committees of Congress, and with business itself to get the necessary funds to re-fit and re-tool the machinery of industrial and business counselling.

Under the Roosevelt and Truman Administrations, the operations of the Commerce Dept. were intentionally trimmed away, year by year, on the theory that "business is well able to take care of itself." During the same period, the role played by the Dept. of Labor was built up.

(Turn Page)

## The Market's There

Pessimistic manufacturers who see in the near record sales of 1954 a threat to markets in the coming year should be cheered by an optimistic viewpoint of one high official. Assistant Secretary of Commerce James C. Worthy reverses sales statistics and points out that despite sales volumes in 1954:

98 pct of the families did not buy a food freezer

97 pct did not buy a room air conditioner

97 pct did not buy an electric range

94 pct did not buy a vacuum cleaner

92 pct did not buy a refrigerator

92 pct did not buy an electric shaver

92 pct did not paint their houses

91 pct did not buy a washing machine

89 pct did not ride in Pullmans or airplanes

87 pct did not buy an automobile

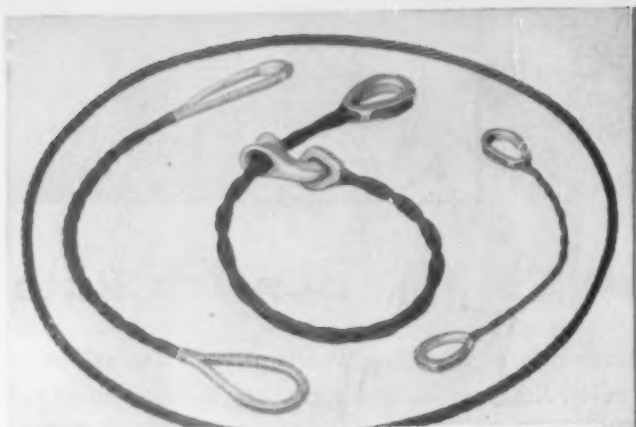
85 pct did not buy a TV set

76 pct did not take a real vacation trip

71 pct did not buy a radio set.

The analysis does not mean, Mr. Worthy points out, that every family could or would wish to replace every item, or many items, every year. It does show, he asserts, that strong promotion will bring many of these potential customers to the point of sale in the coming year.





#### Braided Wire Rope Slings

Materials handling—from unloading a car of pipe to handling a 200-ton generator—requires a wide variety of safe, economical, easy-to-handle slings. The sizes and types of Macwhyte Slings are practically unlimited—they are available in many standard designs or can be custom-made. Bulletin lists and illustrates many types and body styles in Round-Braided, Flat-Braided and Single-Part Slings. Specify Bulletin 5308.

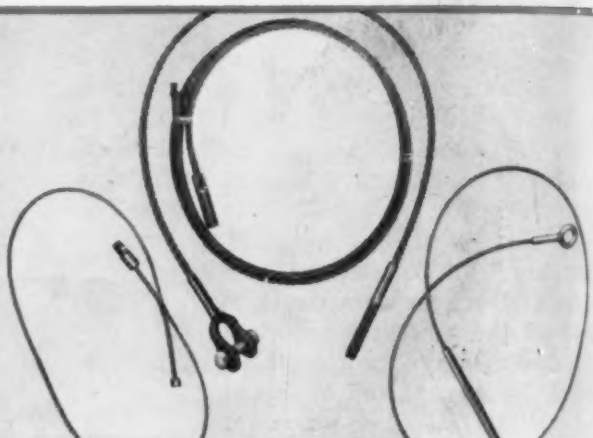


#### Wire Rope

Proper selection of wire rope is most important in getting safe, economical operation. To provide the right ropes for each of the many kinds of equipment, Macwhyte Company makes a thousand and one types and sizes. Included are PREformed Internally Lubricated Ropes, Galvanized Ropes, Stainless Steel, and Monel Metal Ropes. Request Catalog G-16.

The proper choice  
from this wide variety  
of wire rope products  
means —

**LONGER and SAFER SERVICE**



#### Wire Rope Assemblies

Safe-Lock Wire Rope Assemblies provide a unit of wire rope with permanently attached fittings made to specified size, length, and strength needed. A wide selection of fittings and wire rope are made for use on small gasoline powered equipment; outboard motors; mining and excavating machines; agricultural implements; automotive, aircraft, marine, and laboratory equipment. Ask for Catalog 5201.

*Recommendations for the correct wire rope product for your needs will be gladly furnished.*

# MACWHYTE

MACWHYTE COMPANY

2911 Fourteenth Avenue  
Kenosha, Wisconsin

Manufacturers of Internally Lubricated PRE-formed Wire Rope, Braided Wire Rope Slings, Aircraft Cables and Assemblies, Galvanized, Monel Metal, Stainless Steel Wire Rope, and Wire Rope Assemblies.



Mill Depots:

New York • Pittsburgh • Chicago  
St. Paul • Ft. Worth • Portland  
Seattle • San Francisco • Los Angeles

**Crowd Their Luck?** . . . Now the question is being raised by some business executives who are more or less Washington commuters as to whether or not Mr. Weeks and his colleagues are not crowding their luck. Mr. Weeks is sincere in maintaining the Business & Defense Services Administration (biggest unit in the Commerce Dept.), as an alert, worthwhile agency of service to business.

But more than one industry official has recently emerged from a Commerce Dept. meeting resentful of over-doses of talk from Mr. Weeks and his staff members.

There's a strong belief among many industry officials that most of the talking at industry-government meetings ought to be done by industry officials, so that the government may learn of their problems and subsequently act to correct them. There's grumbling over what is called "lecturing" and "talking down" by government officials.

**Strike Threat Real** . . . Capitol cloakroom talk indicates that a higher wage floor for auto manufacturers' employees will be set in place in 1955.

A heftier pay envelope probably will be granted as a means of keeping the workers from walking out, for the threat of a strike next year is not an idle one. Auto builders, protecting the hope of exceeding 1954 production by about 10 pct, will be willing to pay a higher price for peace with labor.

The price isn't going to include the promise of a guaranteed annual wage, however, no matter how strongly committed union leaders are on this point. Manufacturers are as firmly entrenched against GAW as ever and are not prepared to back down from their position.

New wage contracts agreed on are not to be of the long-term variety. Duration of these agreements, committing producers to the payment of higher wages, is to be about two years, with re-opening rights at the end of the first year.

## Census:

### Business survey forms ready for mailing after Jan. 1.

Government census officials will begin taking the delayed, but important, censuses of industry, business and the mineral industries soon after the first of the year. Success of the operation now depends on industry.

For the \$3.5 million census of industry, the Census Bureau has tailored over 200 separate forms to fit specific or related industries among the country's 275,000 factories. Forms will be mailed out soon after Jan. 1.

#### What You'll Be Asked

Industry is being asked to fill out the forms accurately and honestly—the forms are completely secret, similar to income tax returns—and whip them back to Washington within 30 days. Officials stress that, in addition to affecting the speed with which results may be tabulated, printed and distributed, quick and accurate replies will materially cut down the cost of the project and permit more funds to be used in developing extra tabulations.

Inquiries to industry will include plant identification; kind of industry; company affiliation and ownership; employment, payroll and hours; cost of materials, fuels and electric energy consumed; power equipment; water consumption; inventories; capital expenditures, and value of products shipped.

#### Last Census in '47

For the census of mineral industries, the 35,000 mines, quarries, and oil and gas establishments will be queried to determine the number, size, location and character of operations by using questions along



## WASHINGTON NEWS

the lines of those asked thousands of U. S. manufacturing plants.

The last census of manufacturing covered 1947 and the last census of mineral industries covered 1939. The third census, covering retail and service trades, brings the total cost of the censuses to \$8.5 million, plus \$5 million required in about two years to cover printing and distribution.

Demand for the results of the manufacturing censuses are revealed by records showing that the last tabulation sold some 100,000 copies. More than 500,000 copies of the last census of retail and service trades were sold.

### Planning Booklet Out

Field offices of the U. S. Commerce Dept. are pushing a new free booklet, *A Job for Management*, prepared to help industry executives plan company defense in case of attack.

A special industry task group helped Business & Defense Services Administration write the booklet. It advises that a company defense plan should provide for: (1) The protection of employees and plant facilities. (2) Continuity of management and technical skills. And (3) continuity or resumption of essential production after an attack.

### Tighten Antitrust

In an effort to further tighten enforcement of the antitrust laws, Attorney General Herbert Brownell, Jr., is proposing a new cooperative federal-state program between enforcement agencies.

Mr. Brownell made the proposal to the National Assn. of Attorneys General recently. He is issuing orders to Justice Dept. field offices to turn over complete files on any monopoly of a local nature to state attorneys general.

In return, he asks that each state legal officer designate an assistant to act as liaison officer with federal trust-busters so that information they uncover may be turned over to Justice Dept.

# For *Long Service* Life



## ...B&W Carbon Steel Pressure Tubing

The collection of qualities found in B&W Carbon Steel Pressure Tubing, Seamless or Welded, adds up to the all-important end result of long service life.

No less important are the "pre-operating" qualities like uniform ductility, accuracy of dimension and ease of fabrication and installation. Each is a plus that contributes to overall *working* satisfaction from beginning to end use.

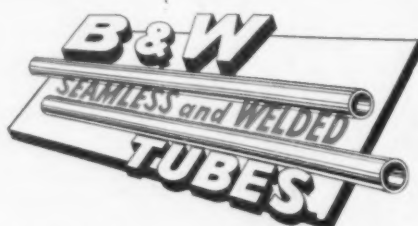
Specifically, B&W Carbon Steel Seamless Tubing is available in sizes up to  $9\frac{3}{8}$  inches outside diameter and B&W Welded is available in sizes up to 4 inches out-

side diameter. Both in a wide range of wall thicknesses.

As for finishes, seamless is produced either hot-finished or cold-drawn and welded is produced from either hot- or cold-rolled strip.

It meets the applicable specifications of the ASTM, ASME and Government as well as many specifications that may be required for an extraordinary end use.

Where and whenever Seamless or Welded Carbon Pressure Tubing is indicated, make use of B&W's many years in the manufacture of all kinds of tubing. Make *use* of B&W Carbon Steel Pressure Tubing.



### THE BABCOCK & WILCOX COMPANY TUBULAR PRODUCTS DIVISION

Beaver Falls, Pa.—Seamless Tubing; Welded Stainless Steel Tubing  
Alliance, Ohio—Welded Carbon Steel Tubing

For the complete Carbon Steel Pressure story, write for B&W Bulletin TDC-142.

TA-4062(CP)





## Steel Distributors Stress Service

**Warehousemen see buyer's co-op at a disadvantage . . . Feel they can offer greater inventory, faster delivery, credit, finishing services . . .**

**McDonald views Hawaii, Alaska as big, new markets—By R. R. Kay.**

♦ **STEEL** warehousemen take a very dim view of any possible success for a steel-buying cooperative. They say such a venture couldn't get off the ground. And they give sound reasons.

An **IRON AGE** check of established West Coast warehousemen finds unanimous agreement that it simply wouldn't be smart business for a steel buyer to trade with a cooperative warehouse. He just couldn't get all the things he needs.

**Carry Large Stocks . . .** The very nature of the warehousemen's stock-in-trade puts a co-op at a disadvantage. Steel warehouses carry large, well-rounded inventories—as much as a million dollars in a metropolitan area—and offer a broad variety of services.

A co-op venture would have to limit its stock to fast-moving items. Members would still be compelled to go outside the co-op to fill out their needs. As soon as they do, they lose the advantage of quantity discounts.

**Give Special Service . . .** Established warehouses give special services to stimulate sales. Cost of machinery alone can easily run \$250,000. It is doubtful if a co-op could match these services.

Steel warehousing needs keen management, which is expensive. This would raise a co-op's costs still further.

In a tight steel market, warehouses naturally favor their old and regular customers. Co-op members, being now-and-then customers, couldn't be sure of a steady source of material.

### See Keener Competition . . .

Leaders in the business predict competition among themselves will compel them to give their customers even more service in the years ahead. More shearing, burning, grinding, and slitting is in the offing. Customers will like this, for it will cut still more their costs of putting material through several shops and will reduce the necessity of investment in machinery. (See **THE IRON AGE**, Oct. 21, 1954, p. 193.)

And speaking of services, here's what most western warehousemen freely give their customers: technical advice on materials; information on government and industry specifications; fast estimates on weights, prices, and availability of materials; and special, speedy handling whenever customers have need for it.

**Seek Power Aid . . .** Pacific Northwest private and public interests have applied to the Federal Power Commission for some \$2 billion in power development projects, according to Interior Secretary Douglas McKay.

This is good news to the power-short Northwest, for these projects would generate about six million kilowatts. In addition, the Federal government is going ahead with development plans under its partnership program.

**Predicts Market Growth . . .** Vast new markets for western steel when Hawaii and Alaska gain statehood is predicted by David J. McDonald, President of United Steelworkers of America. While attending the CIO's national convention in Los Angeles, Mr. McDonald told **THE IRON AGE**, "California obviously has no problem attracting labor, and with the ingredients for making steel practically in its back yard, it's only a matter of short time before steel-making centers here rate with cities like Birmingham and Gary in steel production and fabrication."

**To Expand Plant . . .** Rees Blow Pipe Manufacturing Co., Berkeley, Calif., is expanding its blower systems manufacturing with a half-million dollar investment in land, equipment, and new 40,000 sq ft factory. . . . Durell Products, Seattle, plans a manufacturing plant in Vancouver, B. C. Firm makes aluminum window frames. . . . American Tractor Equipment Corp., Oakland, Calif., put \$110,000 into a new plate shop and expansion of its fabricating shop. . . . American Gyro Corp., Santa Monica, Calif., manufacturers of gyroscopes and miniaturized control equipment for guided missiles and aircraft, was bought by Daystrom, Inc.



"I'd like to open an account."

# Announcing...

## Kearney & Trecker's *NEW* RAM HEAD

plain and universal  
milling machines

**K**EARNEY & TRECKER'S new line of Ram Head milling machines combines a conventional horizontal spindle and a self-contained motorized sliding ram. As a result, horizontal and vertical spindles can be run separately and simultaneously.

The Ram Head machines are available with a choice of three heads — Universal, Vertical and Quill types which can be rotated through 360°. You can perform vertical, horizontal and angular milling on one machine in a single setup. They are built in Model CH, CK and CSM designs with 69 different machines in sizes from No. 2 to No. 4 in both plain and universal styles. Machines may be equipped with either Standard Directional Table Control, or Mono-Lever and Automatic Cycle Table Control.

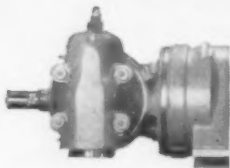
For the full story, contact your nearest Kearney & Trecker representative, or write Kearney & Trecker Corp., 6784 W. National Ave., Milwaukee 14, Wis.



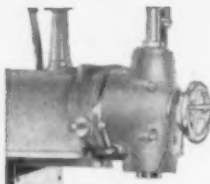
20/10hp No. 3 Model CSM, Plain style Ram Head milling machine with Mono-Lever and Automatic Cycle Table Control and Type U Universal Head.

**with choice of three  
types of heads**

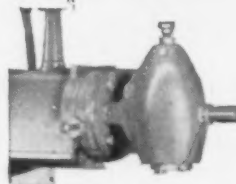
(Eight spindle speeds in three optional ranges)



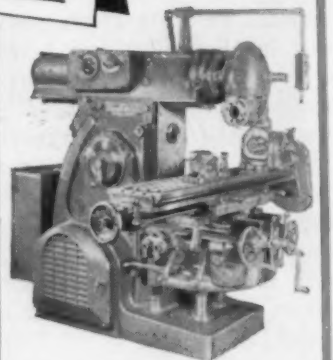
**Type U Universal Swivel Head**  
Capable of numerous milling combinations, this Ram Head has two graduated bases at right angles to each other, both of which can be swiveled thru 360°.



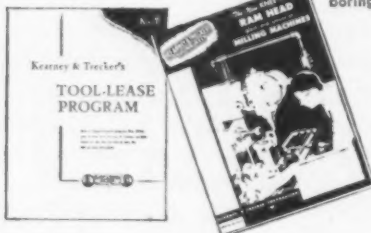
**Type Q Adjustable Quill Swivel Head**  
Spindle can be set at any angle through 360°. Ram Head has 3 1/2" hand-feed quill movement . . . micrometer stop and dial indicator for angular milling or boring of more than one height.



**Type V Vertical Swivel Head**  
Especially adapted for vertical and angular milling. Spindle housing base is graduated and spindle can be set at any angle thru 360°.



7 1/2 hp No. 3 Model CH, Universal style Ram Head milling machine with Standard Directional Table Control and Type U Universal Head.



### FREE CATALOGS!

Ask for catalog No. RH-10A for complete data on Ram Head Plain and Universal milling machines, and Tool-Lease bulletin, TL-10A. Also see our catalog in SWEET'S.



# Kearney & Trecker Corporation

MILWAUKEE 14, WISCONSIN



## Automation Seen As Mixed Blessing

Reaction to automation varies greatly . . . Some fear it may cause unemployment, say it hasn't reduced costs . . . Others believe it will raise standard of living all over the world—By E. J. Egan, Jr.

♦ **AUTOMATION** in the giant metalworking industry, like an ink blot on a piece of paper, has different meanings to different people. To some it is an industrial phenomenon. To others it is simply an evolutionary product of the machine age.

Almost everyone will concede that automation is bound to have a sociological effect on the American public. How much or how little; how good or how bad? Ask your friends, your employees, your business acquaintances. Odds are you'll get some interesting and startlingly different answers.

Maybe the answers you get will resemble some of these:

**What They Say . . .** From an editor of a petroleum industry trade magazine: "I never thought much about it one way or the other until recently. After all, we've had automation in our field for a long time. It takes only a few men to run a refinery and we're used to that. But I saw a movie of Ford's Cleveland engine plant a while back and it really jolted me.

"Here was this long line of machine tools turning out engine blocks from start to finish. No machine operators around, just a man walking up and down the line. When a red light went on it meant that a tool needed changing. The operator merely put in a new tool, pushed a button and bang, everything started up again.

"If this thing gets much bigger where are factory workers going to get jobs? I know there will be in-plant transfers, and an upgrad-

ing of skills, but some folks are going to be out in the cold. Those who aren't alert enough to shift jobs or industries, or smart enough to be up-graded, what happens to them?"

### Prices Haven't Been Cut . . .

From an executive in the export division of a large manufacturing concern: "This is supposed to be the greatest cost-cutting device we've ever seen. As I understand it, the automobile people have gone whole hog for this thing. But I don't see that factory prices of the more popular cars have come down to speak of. As far as I know, some of them have even gone up.

"If automation can make a product cheaper by cutting out a lot of high-priced labor, how come we have to pay as much or more for a car now as we did a year or 2 years ago? Especially if we have a stable dollar."



"You just gotta be quick and accurate on the crossfeed."

### Want Their Money Back . . .

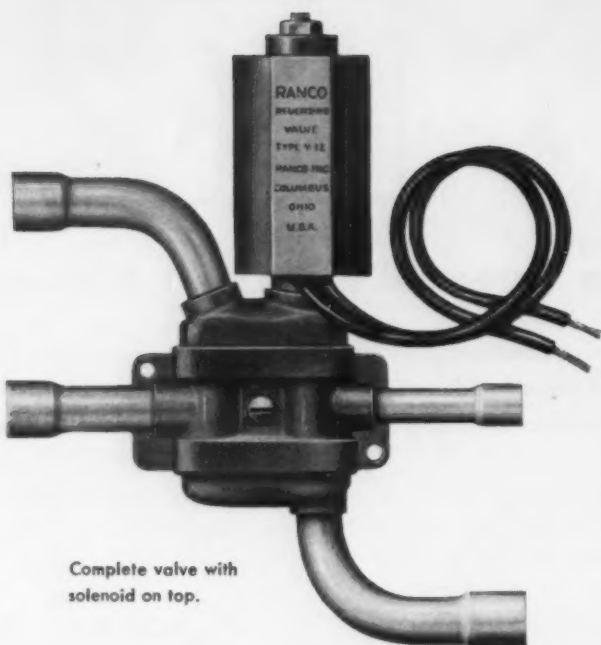
From a purchasing agent: "As I see it, automation is still too new to have its cost-cutting benefits spread all over the place. It takes a lot of money to install that equipment, maybe borrowed money at that. I think the companies are still trying to get back some of their investment out of the automation savings, if any. They just haven't had time to reflect the savings in lower prices.

"Let's say some of the carmakers and appliance firms have been just about ready to chop a few dollars off their prices because they've saved money on these fancy production lines. Before they can do it, a competitor or even their own engineers come up with something new. Right away they've got to junk a lot of their machinery and re-tool all over again if they want to stay up on top. So whatever they've saved has to be dumped in the pot with a lot of new money to buy more automation."

**"Scares Me" . . .** From a production engineer: "The whole thing scares me a little bit. I keep thinking of the atomic scientists who became conscience-stricken at the thought of what they'd presented to humanity. Maybe some of these 'automation brains' are starting to wonder, too.

From a railroad executive: "Automation is another one of these 'greatest good for the greatest number' ideas. It will hurt some people, but it won't come fast enough to hurt too many at one time.





Complete valve with solenoid on top.

# REVERE

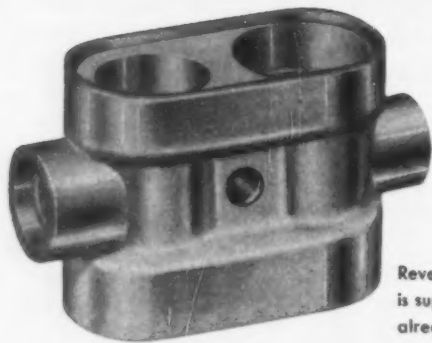
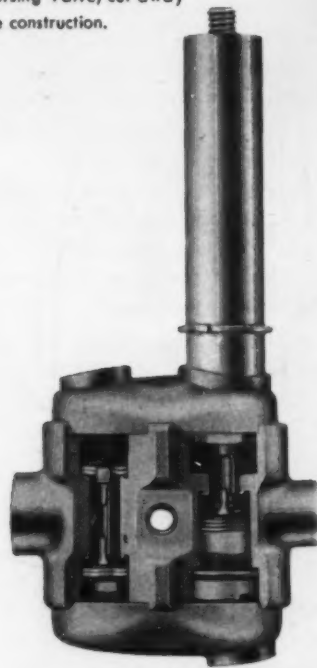
collaboration  
helped make  
this reversing  
valve possible

The valve shown here is unique. It is made by Ranco, Incorporated, Columbus, Ohio, and is being supplied to manufacturers of air conditioners that either cool or heat, according to the temperature. When the thermostat calls for cooling, a solenoid moves the valve to the cool position; when heat is required, the operation is reversed, automatically.

Naturally, the development of this valve took a long time. For some five years the Revere Technical Advisory Service has been collaborating closely with Ranco engineers on design and materials for control valves of various types. When the new idea was under development, Revere was called in because non-magnetic brass and copper would be required for the body. Designs were mutually studied, and it was decided to make the main portion of the body from a brass forging, which would lessen machining and provide a dense, non-porous, non-leaking part. Many thousands of these reversing valves have been shipped to makers of  $\frac{1}{2}$ ,  $\frac{3}{4}$  and 1-horsepower units, without a single forging rejection. One important feature of the forging is that it makes possible silver brazing the inlet and outlet tubes so quickly that no damage is done to the synthetic valve washers. Ranco feels that the valve has a tremendous future, offering as it does completely automatic selection of heating or cooling.

When you have a new project on your boards, involving aluminum, brass or copper, we suggest you get in touch with the Revere Technical Advisory Service. Its knowledge added to yours may make your products better. See the nearest Revere Sales Office.

Ranco Reversing Valve, cut away to show the construction.



Revere Brass Forging is supplied to Ranco already machined.

## REVERE

**COPPER AND BRASS INCORPORATED**

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**230 Park Avenue, New York 17, N. Y.**

*Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y. Sales Offices in Principal Cities. Distributors Everywhere.\**



## The Iron Age

## SALUTES

**Thomas I. S. Boak** A man with a different kind of success story—he's made an outstanding career of bringing ailing and near insolvent businesses back to life with large doses of managerial know-how.

"Revitalizer of tired, red-inked industries" would seem to be an appropriate sub-title for Tom Boak, president of Plume & Atwood Mfg. Co., Waterbury, Conn., who has twice changed the direction of corporate destinies from failure to success.

When Tom became works manager at Winchester Div. of Olin Industries in 1932, a large proportion of the company's floor area had been sublet to other firms. For the 14 years previous Winchester had operated without showing a profit.

Within a few years after Tom came to Winchester, employment increased and operations showed a profit. The company gained a reputation as one of the most progressive in the New Haven area; was one of the first to voluntarily establish a retirement plan for employees.

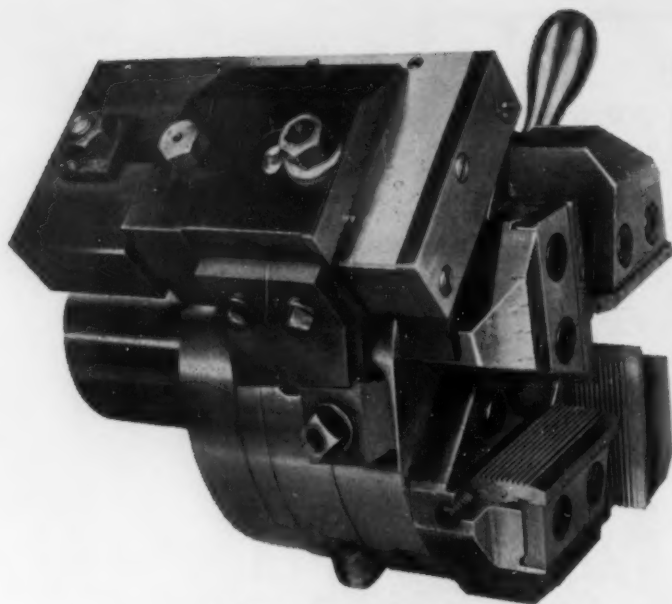
In February 1950, when Tom was elected president of Plume & Atwood, history began to repeat itself. Tom assumed leadership of an organization whose financial assets had been dissipated, whose equipment was antiquated, and

whose stock had dropped to a discouraging low.

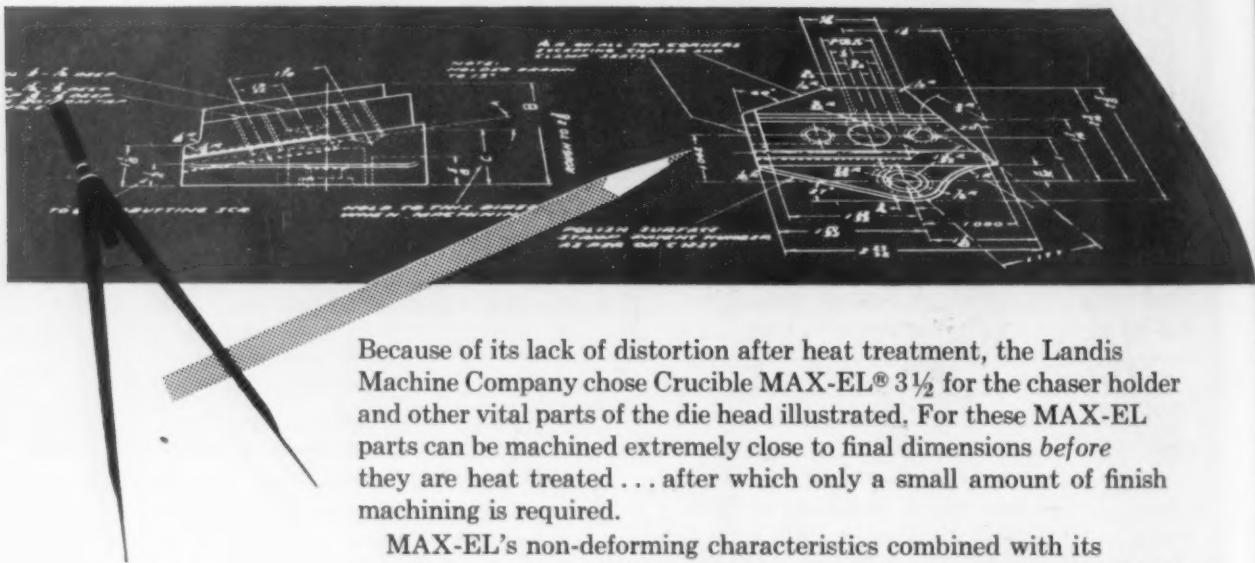
In the few years since Tom took over Plume & Atwood he's modernized operations in the rolling mill, successfully reorganized the financial structure and provided a new, \$1.2-million fabricating plant. Proof of success; the firm's stock has tripled in market value during his tenure as president.

Tom received his Mechanical Engineering degree from Cornell. He was captain of the university's wrestling team and until recently was the only man in the Eastern Intercollegiate Wrestling Assn. to wrestle for three years without a single defeat. Today, however, Tom's extracurricular interest has turned toward a more gentle sport, sailing.

Always an active participant in industry and community affairs, Tom has helped raise funds for a New Haven hospital, has been a member of the advisory committee for the sale of U. S. Savings Bonds in the state of Connecticut. He's also a member of the Copper & Brass Research Assn. and American Management Assn.



Non-deforming **MAX-EL** alloy steel parts  
require minimum finish machining



Because of its lack of distortion after heat treatment, the Landis Machine Company chose Crucible MAX-EL® 3½ for the chaser holder and other vital parts of the die head illustrated. For these MAX-EL parts can be machined extremely close to final dimensions *before* they are heat treated... after which only a small amount of finish machining is required.

MAX-EL's non-deforming characteristics combined with its excellent wearing qualities and great strength are important in high-speed turret lathe die heads... and in many other applications.

Your shop will benefit, too, from the ease of machining, freedom from distortion, superior quality and longer tool life you get with MAX-EL. To start taking advantage of MAX-EL now, call Crucible.



**CRUCIBLE**

first name in special purpose steels

54 years of *Fine* steelmaking

**ALLOY STEELS**

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## The Iron Age INTRODUCES

**Ara A. Cambere**, named assistant to the president, Stewart-Warner Corp., Chicago.

**Carl J. Oxford**, becomes vice-president - Engineering, National Twist Drill & Tool Co., Rochester, Mich.

**J. F. McRoberts**, named vice-president and general manager, Progressive Welder Sales Co.

**George W. Walton**, promoted to executive vice-president, Ideco Div., Dresser Equipment Co., Dallas.

**Frederick H. Schroeder**, elected a director of Barium Steel Corp., New York.

**John G. Ketterer**, elected to board of directors, Hercules Motors Corp., Canton Ohio.

**Robert J. Loskill**, appointed managing director, new wholly-owned subsidiary of Caterpillar Tractor Co. in Sao Paulo, Brazil, Caterpillar Brasil S. A.—Maquinas e pecas.

**Henry H. Rolde**, elected treasurer, Max Schlossberg Co., Chicago.

**Joseph J. Ternes**, appointed assistant to the director of public relations and will be in charge of Los Angeles public relations office, Kaiser Steel Corp., Oakland.

**Fred A. DeMaestri**, becomes vice-president-Operations, Michigan Chemical Corp., St. Louis, Mich.

**Calvin J. Werner**, appointed general manager, Moraine Products Div., of General Motors Corp., effective Jan. 1. He succeeds Bernard A. Brown, who is retiring after more than 40 years of service.

**Dana T. Hughes**, appointed director of information, American Locomotive Co., Schenectady.

**V. Lloyd Smith**, appointed chief engineer, Fort Pitt Bridge Works, Pittsburgh. He succeeds A. V. Dolan, who has retired due to ill health.

**Hubert D. Jackson**, appointed sales and service engineer, Ohio, Indiana and Kentucky territory, O. Hommel Co.

**John M. Switzer**, is sales engineer in charge of new sales office in Atlanta, Ga., The Virginia Steel Co., Inc.

**Dean Burgan and Dr. William H. Rice**, have joined the technical staff, Electric Steel Foundry Co., Portland, Ore.

**B. C. Robertson**, named district sales manager, Houston office, Lone Star Steel Co.

**William S. Mounce**, appointed to New York office as a member of the division's Construction Alloy Steel Section, The International Nickel Co., Inc., and **James B. Morey**, appointed in charge of the Cincinnati Technical field section of the Development & Research Div.

### PERSONNEL



**THEODORE C. KOCH**, promoted to vice-president and general manager, Ace Tool & Machine Co.



**R. LESLIE MULLEN**, elected executive vice-president, Lehigh Structural Steel Co., Allentown, Pa.



**MICHAEL TOLLE**, becomes vice-president-Sales, Ace Tool & Die Co.



**JOHN P. PARKS**, appointed secretary and comptroller, Firth-Loach Metals, Inc., McKeesport, Pa.

**Dr. William Firestone**, appointed to newly created position of assistant chief engineer, Research Dept., Motorola's Communications and Electronics Div.

**Charles S. Sanford**, appointed superintendent - 80 - in. hot strip mill, U. S. Steel Corp.; **Max E. Bills**, becomes superintendent-continuous pickling; and **Roland G. Ebert**, becomes superintendent of slab conditioning.

**Ralph P. Deputy**, appointed assistant to general superintendent, U. S. Steel Corp.; **Earl D. Spangler**, named division superintendent—sheet mill; and **Roland E. Peterson**, appointed division superintendent—hot rolling.

**Chester R. Austin**, becomes head of Oxygen Steel Div., Kaiser Engineer Div. of Henry J. Kaiser Co., Oakland.

**Eugene P. Reed**, named manager of raw materials, U. S. Steel, Tennessee Coal & Iron Div.; **Irvin C. Kinney**, becomes advertising manager.

**John Kozelski**, becomes general plant manager, new Morrisville, Pa., branch of Stainless Processing Div., **Wall Colmonoy Corp.**; and **Robert H. Mezger**, becomes district sales manager new district sales office in St. Louis.

**Robert M. Stecker**, joins grinding wheel sales staff, **Electro Refractories & Abrasives Corp.**

**Fred Kremer, Jr.**, promoted to business manager, Armour Research Foundation of Illinois Institute of Technology, Chicago.

**Hicks B. Waldron**, appointed materials specialist, **General Electric Co.**, Distribution Assemblies Dept.



**ALEXANDER T. BUSH**, appointed director of distribution services, Acme Steel Co., Chicago.



**A. D. MONCRIEFF**, appointed manager-Machine Tool and Cutting Tool Divs., Michigan Tool Co.



**CLAYTON E. SCOTT**, appointed chief engineer, Michigan Tool Co.



**HJALMAR NILSSON**, appointed chief engineer, Magnesium Co. of America.

A-1033

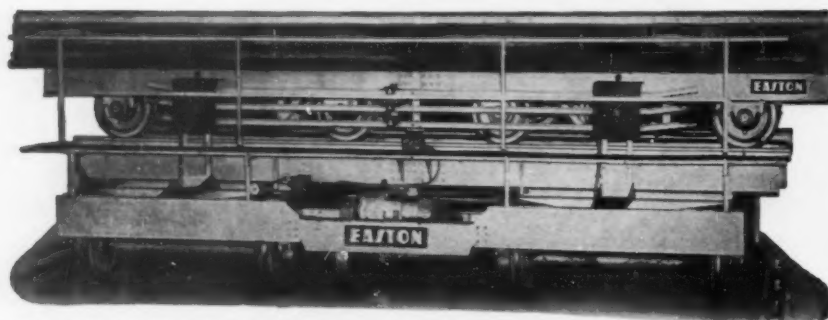


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## PERSONNEL

**Ralph J. Hese**, promoted to production manager, all company's operations, The Steel Improvement & Forge Co., Cleveland; and **Carl D. Ondracek**, becomes superintendent.

**Leo B. Zaremba**, appointed production manager, Formsprag Co., Van Dyke, Mich.; and **William N. Lesnew**, appointed shop superintendent.

**Robert T. Githens**, promoted to assistant to the works accountant, Allenport, Pa., plant, Pittsburgh Steel Co.; and **Frank N. Ellis**, promoted to supervisor of mill accounting clerks for the sheet and tube divisions at Allenport.

**John E. Wennogle**, promoted to division sales manager, New York area, covering New York and New England and parts of New Jersey, Hubbard & Co.

**Ralph W. Moss**, appointed sales manager, Haskel Engineering & Supply Co.

**C. Allen Davis**, appointed division superintendent, Carrie Blast Furnace Division, U. S. Steel Corp., Homestead District Works.

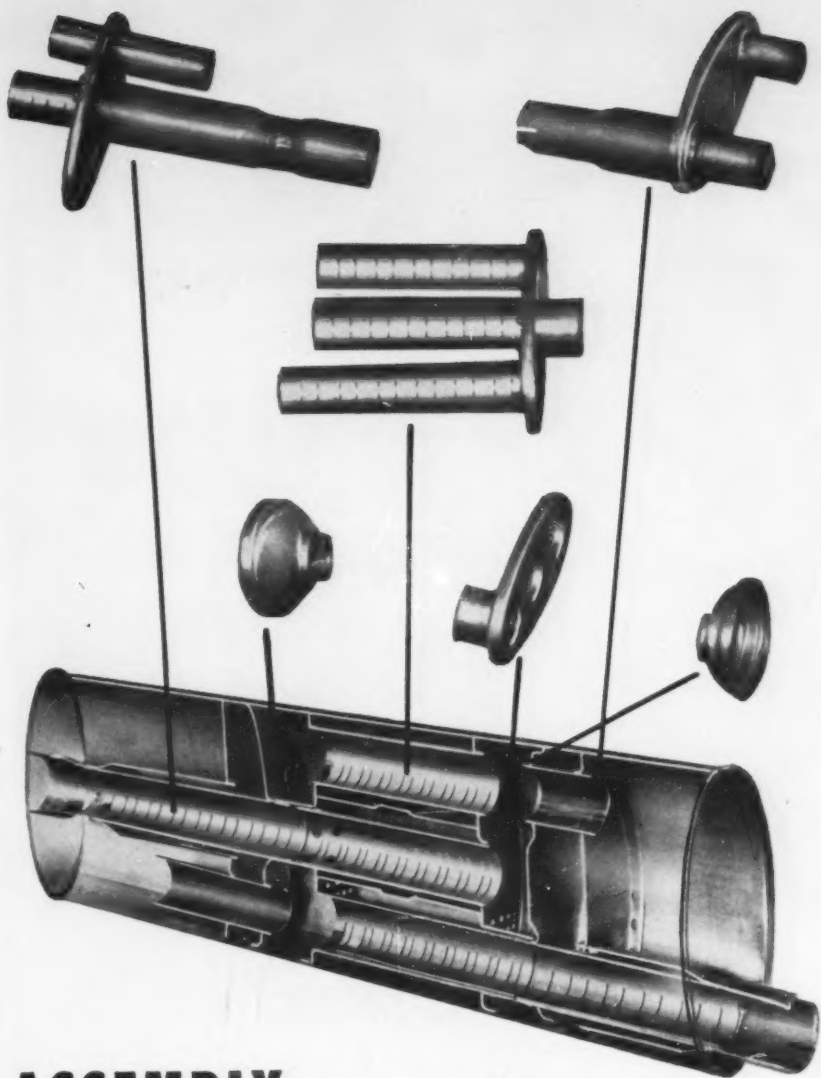
**Joseph Kovaleski**, appointed to the management staff, Coulter & McKenzie Machine Co., Bridgeport, Conn.

**Hugh V. Diamond, Jr.** appointed sales and product counselor, Bulldog Electric Products Co., Detroit.

**David J. Blythe**, appointed production superintendent, Metals Manufacturing, National Lead Co., New York.

**F. Kern**, has been assigned to the West Coast district, KSM Products, Inc.

**Albert B. Anderson**, appointed sales representative, Steel Strapping Div., Toledo headquarters, The Stanley Works, New Britain, Conn.



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### PERSONNEL

**Gerald L. Glespen**, becomes sales analyst, Sales Dept., Hooker Electrochemical Co., Niagara Falls, N. Y.

**Edward M. Bancroft**, promoted to master mechanic, Hamilton Standard, division of United Aircraft Corp., Windsor Locks, Conn.; and **John E. Bateman**, promoted to chief tool engineer.

**Andrew K. Kolar**, appointed purchasing agent, Link-Belt Co. Chicago plant. He succeeds Henry M. Coen, who is retiring after 45 years of service with the company.

**C. R. Strehler**, appointed sales representative, P & H Welding Equipment Div., for the State of Michigan, Harnischfeger Corp.

**W. Homer Jennings** and **LeRoy P. Stanton**, appointed special representatives in the electronic data processing machines corp., International Business Machines Corp.

**C. Carlton Colyer**, appointed sales representative, Pennsylvania territory, National Can Corp.

**W. J. Barnett**, transferred to Atlanta, Ga., The Glidden Co.; **Russell Hyde**, becomes sales representative, St. Louis territory; and **Russell Hale**, joins the firm.

**Roger C. Flinn**, promoted to zone sales manager, Memphis area, Thor Corp., Chicago; **Robert F. Kaufmann**, becomes director of public relations and sales promotion; **Charles F. Boice**, appointed Philadelphia zone manager, and **John Murray**, becomes Kansas City zone manager.

### OBITUARIES

**V. Harvey Dieterich**, 69, retired vice-president, Joseph T. Ryerson, & Son, Inc., Chicago.

**David Joseph, Sr.**, 68, chairman of the board, David Joseph Co., Cincinnati, recently.

**Unusual problems—**

# VIBRATION TESTING Increases Machine Tool Efficiency

By W. D. NESBIT, Vice President of Manufacturing,  
Consolidated Engineering Corp.,  
Pasadena, Calif.



**TOOL POST** of turret lathe proved to be vibrating and causing short cutter life on 4310 steel. Vibration meter and pickup located the trouble.

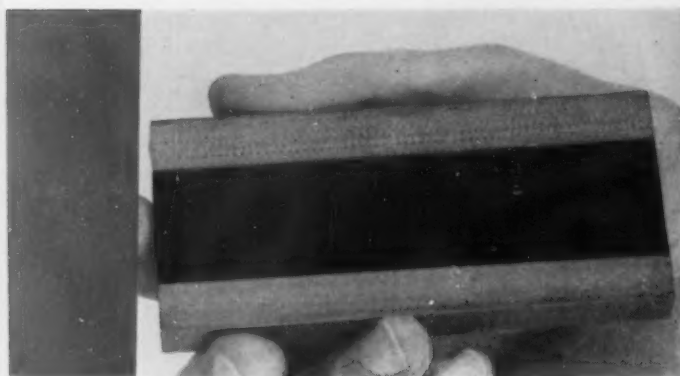
◆ In plants using machine tools, vibration instruments can be used for increasing output as well as maintenance and trouble shooting . . . Inexpensive and easy to use, they take the guesswork out of detecting and measuring every day machine tool vibration.

◆ At Consolidated Engineering Corp. cutting or machining problems which don't lend themselves to usual corrective measures are subjected to vibration tests . . . In most cases this pinpoints the problem . . . So far they have been applied successfully to solve milling, turning and grinding problems in the production of precision parts.

◆ **TIGHTER TOLERANCES** and improved surface finishes have marked the modern advance of machine tool technology. This has meant benefits both to the purchasers of machined parts in eliminating expensive hand finishing, and to the manufacturer who has attained increased production from today's higher machine speeds.

These accomplishments, however, have not been made without sacrifice. Along with these improvements, new problems have confronted the machine tool operator. Chief among them is the increased importance of vibration.

A vibrating tool can have a tremendous power—either for work or destruction. A vibrating element at 1000 cycles per second (cps) with an amplitude of 0.0002 in. can produce a force equal to approximately 10 times gravity. It is possible that tool loadings in a cutting operation can be magnified many times. If excessive vibra-



**SAMPLE BLOCK** from surface grinder. Top surface shows flutter due to unbalanced wheel. Lower surface was ground with balanced wheel.



**BEARING VIBRATION** output shown on meter, detected trouble on profiler. Operator is shown using probe and vibration pickup device.

**"Vibrations have become increasingly difficult to qualify and detect without instruments . . ."**

tion is present, frequently not only tool cutting edges will be destroyed, but the work being machined has to be rejected.

These vibrations have become more difficult to qualify, and in many cases impossible to detect without instruments. Low amplitude vibrations on the order of 0.0005 in. found in a machine tool cannot be qualified by the human touch. Vibration instrumentation is one way in which these vibrations can be successfully detected and measured.

Consolidated Engineering Corp. maintains a machine shop containing some 60 major machine tools, ranging from turret lathes, profilers, milling machines, large and small grinders, to jewelers' lathes. These machines are used to manufacture precision parts required in the company's instruments.

For years the company has been a leading manufacturer of sensitive vibration meters, pickups, and torsigraphs. Yet it was only recently that these company products were put to use to improve manufacturing processes.

Today in CEC's shop, cutting or machining problems which do not lend themselves to the usual corrective measures are subjected to test with vibration-measuring equipment. In most cases this pinpoints the problem. Being unusually conscious of vibration and its effects, the company is convinced that the use of vibration-measuring equipment is more than justified by the amount of time saved on some commonplace problems occurring in the machining of metals.

One of the first problems to which vibration instrumentation was applied in Consolidated's shops was short cutter life obtained from a turret lathe machining 4130 steel.

Microscopic examination of the tool revealed

that abrasive wear was not the problem. The cutting edge appeared to be fractured—as if it had been hit a hard blow. A CEC 4-102A Pickup was attached to the lathe's tool post, and readings taken on a CEC 1-117 Vibration Meter. Vibrations in the order of 600 to 700 cps at amplitudes of approximately 0.0003 in. were shown, an indication of real trouble.

When tightening all hold-down nuts, and changing speeds did not eliminate the problem, the cause was found to be an improper seating of the tool post on its base. Regrinding the post and lapping the seat eliminated the damaging vibration, and tool-life became satisfactory.

This was the beginning. The next step was to initiate a program using vibration meter and pickups to determine what more could be found out about vibration in machine tools.

**Minimize vibration merit**

To produce excellent finishes, the machine tools responsible must be maintained in first class condition. Essential to this condition is the minimum vibration inherent in the machine—called the vibration merit. It is dependent upon two factors, the design of the machine and the environment in which it is installed. By means of vibration instruments, Consolidated can immediately detect the vibration merit of a machine.

A surface grinder cannot be called a particularly complicated machine tool. If it is working properly, excellent finishes are obtained without difficulty. However, if the grinding wheel is out of balance, surfaces will suffer and will not pass inspection.

When finishes of the nature of 6 to 10 micro-inches are required, the elimination of flutter marks means that lapping becomes much easier. In fact, if a grinder consistently produces its best finishes, time spent in lapping and subsequent operations can be reduced up to 50 pct.

In making tests on one grinder in the plant, it was soon found that excessive vibration was coming from a source other than the grinding





**MILLING MACHINE** with Torsiograph attached and reading into vibration meter. Higher feed and rpm found possible, increased machine output.

wheel. Use of a Strobe light "stopped" the wheel, pulleys, and drive belt, and showed that the drive belt was slipping on its pulley. Furthermore, the machine, as mounted, was receiving vibrations through the floor. When the pulley was tightened and the machine remounted, this vibration was reduced to a minimum. Use of the vibration meter and pickup then revealed 0.00004 in. peak to peak displacement as the vibration merit value of the grinder running without a grinding wheel.

#### **Improve surface finish**

After a balanced grinding wheel was tightened in place and the wheel dressed, a sample block was ground. The surface appeared smooth and measured a 5 microinch finish. Next, the adjacent surface on the block was reground after the balance weights had been changed to unbalance the wheel. A direct comparison showed that the surface finish was noticeably scalloped and uneven in excess of 8 microinches. Vibration amplitude was increased to 0.00006 in., peak to peak, as read on the vibration meter—a 50 pct increase from balanced conditions.

From this simple experiment, several facts became apparent: (1) vibration reduction of the working element (in this case, the grinding wheel) is no better than the vibration merit of the machine; (2) malfunction of the machine can greatly increase vibration; and (3) these vibrations, though extremely small, can result in rejected surface finishes.

#### **Detect bearing looseness**

In another application, a large profiler began turning out work of poor surface finish. The machine had had considerable use and the cutting tool began to chatter. By using the new second spindle of the machine, a means was provided to obtain the basic vibration merit. Under identical, no-load conditions with both shafts operating, the well-used spindle exhibited a

vibration amplitude of 0.0001 in., peak to peak. By contrast, the seldom-used shaft exhibited a 0.00004-in. peak to peak vibration amplitude. The trouble was located in a bearing that needed attention.

Vibration instruments again proved their ability as a tool to detect difficulties. It would have been difficult to determine the bearing looseness with dial gages or by human touch, since this looseness only became apparent under operating conditions and at extremely small amplitudes.

In another experiment, a large milling machine was straddle-milling an aluminum casting for Consolidated's oscillograph cameras. The milling machine was using two large carbide-tipped cutters which had been adjusted by an experienced machinist to what was, in his opinion, the best operating speed. A Consolidated Torsiograph was then attached to the mill spindle, and shaft speeds and feeds increased within safe limits. At 50 pct greater rpm and 22 pct increased feed, the torsional vibration was approximately 50 pct less.

#### **Vibration impact on carbide**

In some cases the vibration impact on carbide cutting tool edges may be extremely destructive. By a simple experiment, torsional vibration, and its contribution to tool shock, was reduced 50 pct. It is also interesting to note that the audible sound of the milling machine working at the higher speed was considerably increased. To the average machinist this would mean unsafe cutter operation. However, instrumentation showed the increased noise did not mean unsafe operating conditions prevailed.

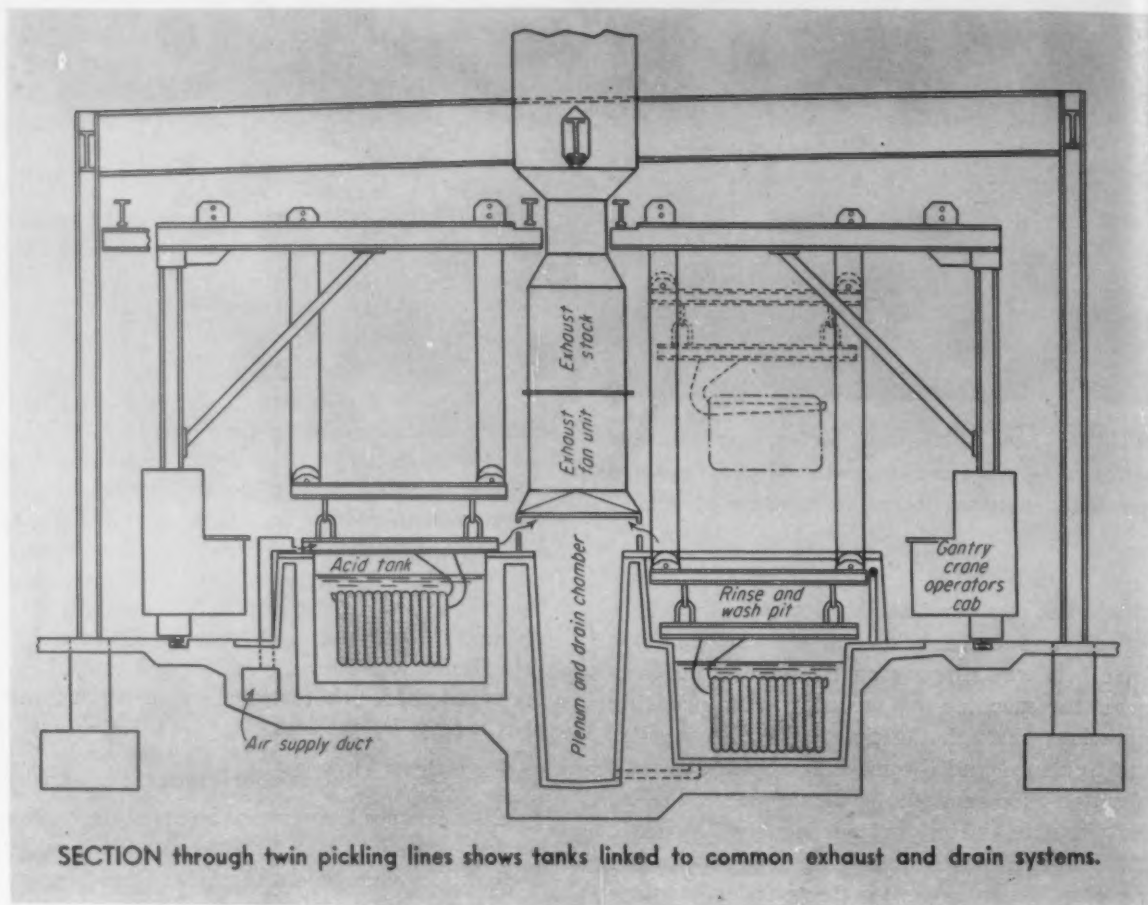
A second shift operated the mill with the readjustment. Surface finish was improved, cutting tools were not adversely affected, and production was stepped up over 20 pct.

#### **Inexpensive and easy to use**

Basically, the measurements obtainable with vibration instruments are of such minute quantities that few other devices can make them. Yet vibration transducers and meters are rugged devices operating on simple electrical principles to detect the vibrations which are the cause of poor finish or otherwise rejected parts.

Even in a small shop using machine tools for production, vibration instruments can quickly become tools for increased output as well as maintenance and trouble shooting. Inexpensive and easy to use, vibration instruments take the guess work out of detecting and measuring everyday machine tool vibrations.

Consolidated plans to continue research on machine tool vibration in its shops. It is hoped that many of the problems which now hamper machine tool efficiency eventually will be solved through such work.



SECTION through twin pickling lines shows tanks linked to common exhaust and drain systems.

**Less handling—**

## In-Line Pickling Setup Aids Continuous Production

By P. K. DUBIN, Mechanical Engineer and F. A. LOCKE, Chief Process Engineer  
Wilbur B. Driver Co., Newark, N. J.

♦ A SPACE SAVING dual pickling line with a single exhaust and drain system has recently been installed in natural production line sequence at Wilbur B. Driver Co. The firm manufactures resistance and other special alloys in wire and strip form.

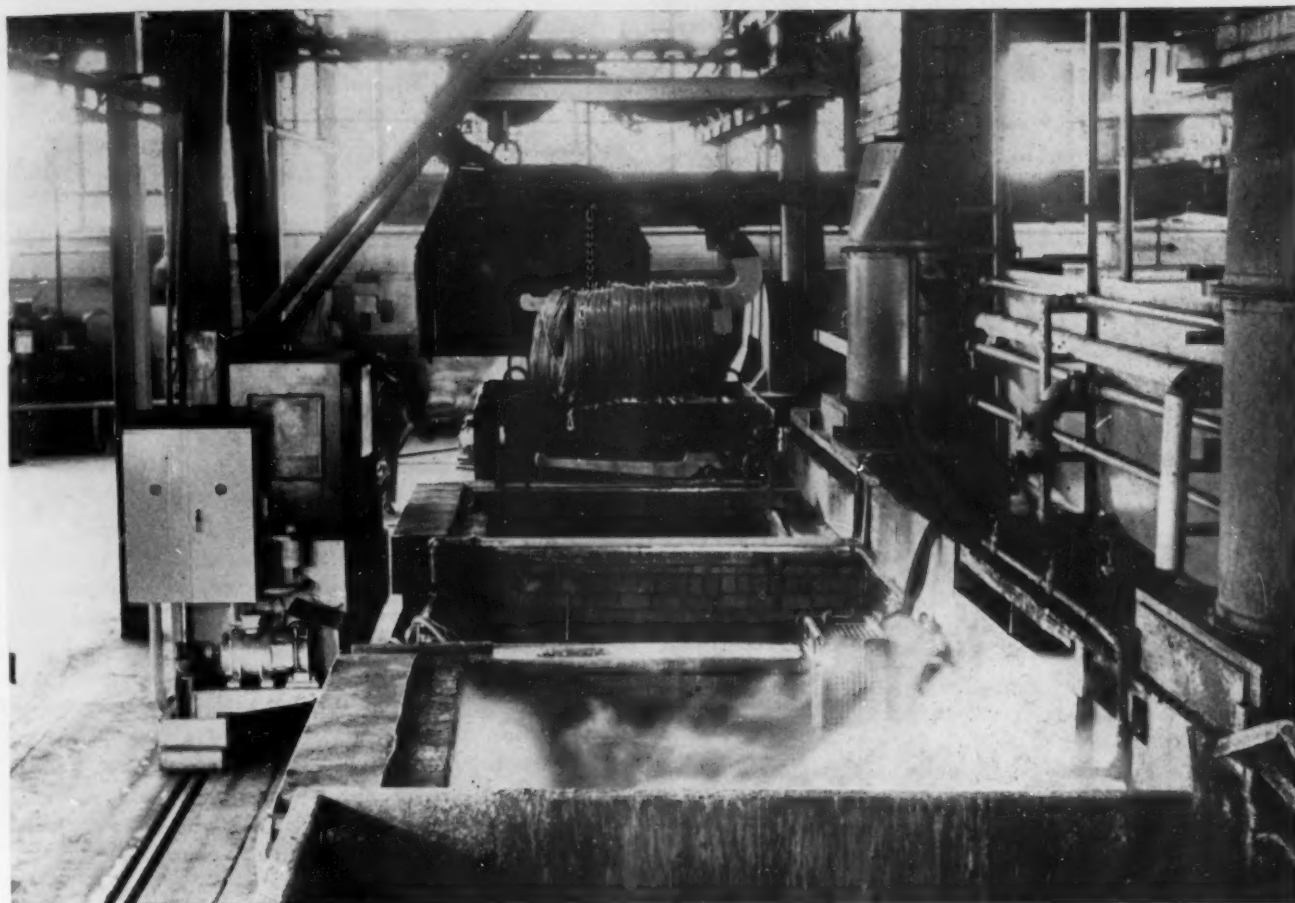
Most pickling lines, particularly those using strong chemicals for special alloys, have usually been located in a separate building, away from departments which the lines service. A remote location was generally believed necessary to collect and discharge pickling fumes. However,

♦ New developments in exhaust systems and acid-resistant materials permit fume-free integration of pickling operations for continuous production . . . Time and money saving benefits are numerous when descaling is not done at remote locations . . . A new, flexible dual-line setup is used to clean a variety of alloys in rod and wire form.

transporting materials to and from the pickling house frequently caused delays and impaired continuous production.

These factors made it desirable to install the pickling operation in its proper production line position. Accomplishment was made possible by using the latest developments in the fields of industrial ventilation and acid-resistant materials. The pickling line layout and cost of the equipment were designed by Driver engineers.

This new installation was placed between the annealing and heavy wire drawing departments.

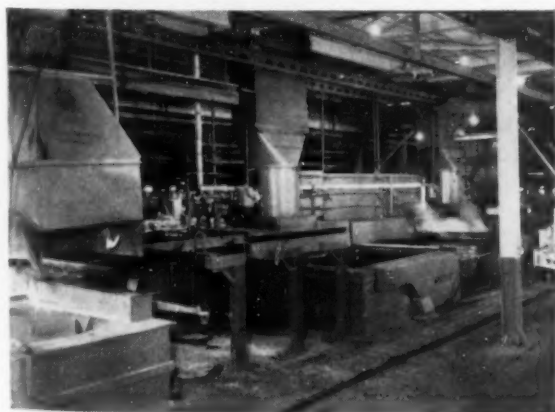


**HAIRPIN** hook holds wire coils over acid tank and wash pit. Exhaust vents and stacks at right.

Hot rolled rods and strip first receive a proper anneal for the grade involved and then move to the pickling line for descaling and cleaning.

The twin pickling lines process a variety of alloys including nickel-chromium and nickel-chromium-aluminum resistance alloys, copper-nickel thermocouple alloys, nickel-chromium-cobalt spring material, beryllium copper alloys, and various stainless steels.

The dual line setup parallels the annealing fur-



**HOODED** hoist over lead tank (left) exhausts fumes as coated coils move to a water quench.

naces on one side and heavy wire drawing benches on the other. The line has facilities for caustic descaling, acid descaling, washing, lead coating, deleading, solution coating, lime coating, baking and bright cleaning.

Side of the line facing the annealing department is equipped for processing nickel-chrome alloys, starting with a storage rack which holds up to 12 pickling hooks or pins. All coils of rods, wire and strip are loaded onto "hairpin hooks" at the beginning of the line by ram lift trucks. These hooks are made of forged stainless steel, and two channel beams are bolted to the hook's top edge.

The beams support the load in the tanks and on the storage racks by resting on tank edges and storage rack supports. Two metal loops extending from the top of the beam assembly facilitate quick, easy movement of the hairpin hooks by a Cleveland tramrail gantry type crane.

A Hooker salt descaling bath is located next to the storage rack. This bath contains Virgo salts and is operated at 1000°F. The salt bath tank was fabricated from firebox quality steel and is mounted on refractory piers in a firebrick lined chamber. Selsa burners fire 550 btu city gas to heat the tank. An iron-constantan thermocouple in a protective tube is immersed in the bath and connected to provide automatic temperature con-



## **Water spray condenses steam from hot coil quenching . . . Reduces the load on the exhaust system . . .**

trol during the operating cycle of the salt bath.

The salt bath is the initial operation for materials with an oxidized surface, such as hot rolled rods and strip, and annealed (open-fire) wire. The bath completes oxidation of the material surface, producing oxides which are readily soluble in the subsequent acid tanks.

After being immersed approximately 10 minutes in the salt bath, coils are transferred to a water quench tank. A perforated pipe along the sides of the tank near the top produces a water spray. This traps the steam generated when hot coils are quenched. Condensing this steam reduces the volume of products handled by the exhaust system.

### **System uses several acids**

After the water quench, coils are immersed in a muriatic acid bath which is maintained at 180-190°F. Following immersion in the acid for approximately 15 minutes, the coils are transferred to a nitric-hydrofluoric bath operating at room temperature. A washing and draining pit, equipped with water hoses, is located between the muriatic and hydrofluoric tanks. A 10-minute dip in the hydrofluoric bath, followed by a washing, completes the cleaning cycle.

Hot rolled rods and processed wire which have been cleaned as described are lead coated prior to drawing. A transfer rack between the hydrofluoric and lead baths transfers coils to a special spindle which rotates them in the lead bath. The lead bath operates at 800°F and is covered by a zinc ammonium chloride flux to facilitate coating and to keep down lead fumes. After lead coating, coils are moved to the wire drawing benches by ram lift trucks.

The opposite side of the pickling line also has a storage and loading rack as its first station. Next to the storage rack are four deleading tanks containing nitric acid at room temperature. These tanks remove the lead coating from the cold drawn wire prior to annealing, after which the coils are thoroughly water washed in an adjacent pit.

A series of three tanks following the washing pit are used for processing special nickel-copper alloys. They include a muriatic tank operated at 185°F, a nitric-sulphuric tank, and a sodium bichromate tank containing 6 pct sulphuric acid. Nickel-copper products are cleaned by 10-minute dips in each of these tanks, followed by a wash in the adjacent pit.

These alloys are then lime coated and baked in another series of three tanks. The tanks are located in one common firebrick-lined chamber and heated by gas fired burners. The first tank

contains a rust preventative and lubricant solution for coating rods and wire prior to cold drawing. The second tank contains caustic soda solution for cleaning beryllium copper alloys. The third tank holds a lime coating solution.

A metal-cabinet Flash Baker is located next to the lime bath. Coated rods and wire are baked at 250°F for 10 to 15 minutes. Final station on this side of the line is a storage tank where coils are removed from the hairpin hooks by ram lift trucks and transported to the drawing machines.

An integrated exhaust system serves both sides of the pickling line wherever objectionable fumes are generated. A slot vent across the back of each fume producing tank leads into a continuous plenum chamber. The chamber is exhausted by two 35,000 cfm fans delivering to separate stacks extending above the roof.

Each exhaust fan is a package unit consisting of a rubber lined duct section, with internal fan bearings piped for external lubrication. The fan is driven by belts which run through a tube welded horizontally in the duct. This tube is sealed off from the exhaust duct by bearings where the shaft passes through the fan. The motor mounting is built on the outside. A maintenance advantage is that the entire unit can be replaced in several hours with a spare unit kept in good repair for such emergencies.

A separate blower system directs air through vents are located along the back and two sides of the tank. Fumes are collected in a main flue and exhausted under forced draft through a stack which extends approximately 100 feet above the roof. Coated rods are lifted from the lead tank by a separate hood-covered crane which exhausts fumes while moving the hot load to the water quench. This hood is exhausted by a vent tube which rides in a horizontal duct. A rubber lined slot accommodates the vent tube as it traverses the duct, which is also connected to the lead bath exhaust stack.

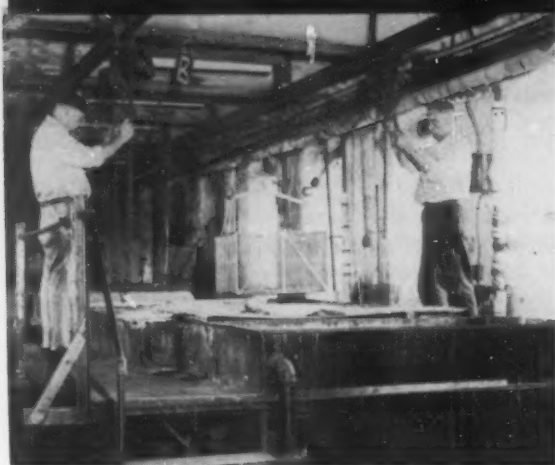
### **One drain serves all tanks**

Drainage from the various stations is collected in the bottom of the plenum chamber which leads to the main drain. Drainage from the water tank serving the caustic bath acts as a neutralizer by entering the main drain ahead of all acid wash liquid. A 1½-ft wide floor strip of acid proof brick runs along the outer edges of the system tanks.

The piping system for HNO<sub>3</sub> delivery is stainless steel, while piping for muriatic acid flow is rubber lined steel. All piping to and from the installation is underground, with a series of hatches for easy access. The concentrated muriatic acid is gravity fed to the pickling tank from a storage tank outside the building.

The general pickling area is illuminated by pinpoint lighting, concentrated at working stations. Acid resisting paint, lubricants and tank linings are used throughout the installation.

### **Cleaners studied—**



ALKALI ETCHING may leave a smut on some aluminum alloys. Smut removal is accomplished by dipping parts in low-cost acid solution.

## **Surface Treatments Improve Properties, Broaden Uses For Aluminum**

- ◆ Good surface finishes on aluminum depend largely on thorough prior cleaning . . . Cleaning is also a "must" before joining by welding, brazing, soldering and spot welding.
- ◆ The method to be used will depend on the purpose for cleaning . . . Among the methods used are: electrocleaning, organic solvent cleaning, etching, alkali and acid cleaning and ultrasonic cleaning.

### **Part II**

By C. C. COHN,  
Director of Research and Development,  
Colonial Alloys Co., Philadelphia

◆ **CLEANING** of aluminum prior to further surface treatments is essential for good finishes. This applies to many finishing processes, among them electroplating, painting, anodizing, etching and others. It also applies to joining processes such as welding, soldering and brazing. The cleaning method to be used will depend largely on the purpose for cleaning.

Among the materials used for cleaning aluminum are the organic solvent cleaners. This group includes straight solvents such as kerosene, mineral spirits, naphtha, gasoline, xylene, tuluol, trichlorethylene, perchlorethylene, carbon tetra-chloride and others.

Articles to be degreased are dipped, sprayed or swabbed. Dissolved oils contaminate these solvents, and in a short time the soil may be re-deposited on the work. Some tend to attack or etch the metal being cleaned.

This group also includes vapor degreasing solvents such as trichlorethylene and perchlorethylene which are used at a boiling temperature in specially designed machines. Cleaning with these materials is effective but it has some attending difficulties.

A third segment of this group are the emulsion cleaners. These consist of solvents such as kerosene, mineral spirits, Stoddart solvent and high-flash naphthas to which are added emulsifying agents. These mixtures are then added to water to form milky emulsions. They are often used hot. Their most effective use is for very light degreasing. They are economical but have limitations in removing some oils and greases.

Emulsifiables form another segment of the solvent cleaner group. They are based on a variety of solvents, among them kerosene, Stoddart solvent, mineral spirits, high flash naphthas,

**There are many acid compounds for specific jobs, but it is best to have one serve several purposes.**

aromatics and others. When correctly formulated and balanced, they do an efficient job of cleaning at low cost. They are used mainly by coating the work by dip, spray or brush methods at room temperature, followed by a water spray or dip.

Soil, oil and grease combine with the emulsifiable solvent film and become emulsifiable themselves. The water then unites with the emulsifiable coatings and forms an emulsion which is readily rinsed off. The solvent itself suffers little contamination, loses nothing but drag-out, is effective in cleaning most soils and is economical.

The monomolecular film left on the work after rinsing helps to prevent air oxidation. This film can be removed easily by a mild alkali or acid wash. It is an excellent passivator prior to anodizing or other acid etching treatment.

#### **Additives improve properties**

Alkali nonetching cleaners comprise another group wherein the basic ingredient is soda ash or trisodium phosphate, or both, and which generally contain alkali silicates as inhibiting agents. They are used hot as aqueous solutions. Their action depends mainly on the detergency of the alkali plus the effect of heat and addition agents to achieve wetting, soil suspension and deflocculation.

The alkali etching-type cleaners are usually based on the strong alkali reaction of caustic soda or trisodium phosphate on aluminum and its soda solutions. Where these materials are

#### **Deoxidizing Treatments Prior to Spot Welding**

- $H_2PO_4$  33,  $HNO_3$  33,  $NH_4OH$  32, plus a wetting agent at room temperature for 20 minutes.
- Aqueous solutions of  $HF$ ,  $H_2PO_4$ ,  $H_2SiF_6$ ,  $H_2BO_3$ ,  $NaF+H_2C_2O_4$ ,  $HF+H_2BO_3$ ,  $H_2SO_4+NaF$ ,  $H_2SO_4+AcOH+NH_4HF_2$  plus wetting agents. A 2-pct solution of  $HNO_3$  at  $180^\circ F$  also gives good results.
- $2\frac{1}{2}$  pct of  $HF$  for about 20 seconds, then 6 pct  $HCl$  for about 90 seconds.

used as the basis for etching, other materials are often added for inhibiting attack, wetting, soil suspending, deflocculating and sequestering.

Addition agents consist in part of sodium nitrate, sodium nitrite, sodium fluoride or chloride, sodium silicate, sodium dichromate, sodium sulphate, gluconates, copper or cobalt compounds, saccharic acid salts, hexahydroxyheptanoic acid salts, permanganates and molybdates. These materials primarily modify the etch rather than completely inhibit it. The result is a finer etch or a more reflective one.

For uniform alkali etching, the work should always be degreased first, then deoxidized or pickled to remove oxides and scales.

Alkali etching leaves a smut or residue on the surfaces of some aluminum alloys. These smuts consist of the alloying elements or their compounds which are not soluble in the alkali etching solution. Most smuts are soluble in nitric acid solutions.

A simple low-cost, room-temperature sulfuric acid type smut remover has been developed, which, beside removing regular smuts, also removes manganese smuts such as those formed



**MIRROR-BRIGHT surfaces on aluminum are achieved by non-electrochemical treatment.**



### What to Use for Removing Anodized Coats and Air Oxide

- Material having acid reaction and containing dihydrogen phosphate.
- Material having acid reaction and containing sulfamic acid and ammonium fluoride.
- Material having acid cleansing reaction and containing ammonium bisulfate, sodium fluoride and metaphosphoric acid.
- 8.2 pct  $H_2SO_4$ +5.2 pct  $H_3PO_4$  (85 pct)+2 pct  $CrO_3$ +84.6 pct  $H_2O$  at 160° to 180°F for 3 minutes.
- 50 lb of 85-pct  $H_3PO_4$ , 16.7 lb  $CrO_3$ , 100 gal  $H_2O$  at 180° to 200°F for 1 to 15 minutes.

on alloys 3S, 4S, 14S, 25S and 56S. Alloys containing substantial amounts of silicon and which have produced silicon smuts through etching, should be pickled in hydrofluoric acid, or preferably in mixtures of nitric and hydrofluoric acids.

There are any number of acid solutions for deoxidizing, pickling, etching and brightening. While there is a wide choice of compounds for specific jobs, it is desirable to have one compound serve most purposes. Deoxidizing may be used for (1) spot welding, (2) before alkali etching, (3) simultaneously with etching, (4) as a pickle before plating, and (5) before conversion coating.

Four of these requirements can be taken care of by a single bath. The exception is in deoxidizing and simultaneously etching in which case the treatment is to first deoxidize, then alkali etch, and finally remove smut in a solution of 10 pct sulfuric acid by volume plus a proprietary salt at room temperature for about one minute.

Deoxidizing or pickling solutions having an etching action are of two general types, i.e., those giving a dull etch and those giving a relatively bright etch. The dull etch materials include dilute solutions of phosphoric, sulfuric, mixed hydrofluoric and nitric acids, and others.

### Some Suggestions for Bright Etching

- Sulfuric acid (sp gr 1.84) 15 pct by volume, chromic acid 5 pct by weight, remainder water, used at 160° to 180°F until desired etch takes place.
- Concentrated phosphoric acid (75 or 85 pct) with or without amounts of 5 to 50 pct by weight of phosphoric acid—or of sulfuric acid at 180° to 260°F.
- Concentrated phosphoric acid (75 or 85 pct) with small amounts of nitric acid at 120° to 160°F. At higher temperatures, specular finishes result.
- Dilute solutions of ammonium bifluoride and nitric acid.
- Dilute solutions of hydrofluoric, nitric and phosphoric acids.

Materials giving miscellaneous or no—etching are hot concentrated phosphoric acid, with or without sulfuric acid; concentrated phosphoric with a small amount of nitric acid; hot solutions of sulfuric-chromic acids; sodium sulphate plus nitric acid; phosphoric acid plus chromic acid; and others.

Some of these materials are so compounded that they remove artificial as well as air-formed oxides without attacking the aluminum sub-surface. Others yield either a light frosted etch, a deep bright etch, or a specular or diffused bright surface.

Solutions for pickling aluminum prior to plating, oxidizing, phosphatizing, conversion coating or anodizing are those that are generally used for deoxidizing, acid etching, bright etching, and cleaning before spot welding. A single bath that serves all these purposes is the 10 pct sulfuric acid by volume plus 1 lb per gal of proprietary salts at room temperature for about 1 minute.

### Electrolytic cleaning effective

Electrolytic cleaning, using alkali solutions such as trisodium phosphate, is effective. The work is cathodic during electrolysis in a heated bath.

Electrolytic polishing actually cleans and brightens aluminum, but it should not be considered primarily as a cleaner. Its main purpose is in brightening, as in reflectors. A number of patented electropolishing brighteners have an acid base such as fluoboric or phosphoric acid.

The art of cleaning aluminum has many methods, solvents, alkalies and acids to achieve specific results. A simple effective cycle for accomplishing almost any desired result would be:

(1) Degrease with a good emulsifiable solvent cleaner.

(2) Deoxidize with a simple all-purpose acid deoxidizer in preparation for spot welding, plating, alkali-etching smut removal, conversion coatings, phosphatizing, chromating or anodizing.

(3) Etching with a low-cost caustic soda solution properly balanced and inhibited for uniform, fast etching without too much spray or hydrogen evolution.

(4) Bright etch or brighten in phosphoric acid types of etchants at low or elevated temperatures.

Selection of a material for degreasing, deoxidizing, etching and brightening is based on a number of factors. Two important ones are solution control and solution life. Of the compounds offered, many perform well in laboratory tests. However, when placed in production, they become quickly unbalanced or have a short life.

Other materials have long life and retain balance without difficulty. Selection should be on the basis of simplicity of control and wide operating tolerance. Specific gravity, simple titra-

## **Electrolytic and chemical brightening gives aluminum high specular reflectance.**

tion, visual signals, practical tests and observations as controls are preferred to complex chemical control. A well balanced solution may cost slightly more, but is far more economical in the long run and gives better results.

Containers for organic solvents are generally made of low-carbon steel. However, some of these solvents, particularly the chlorinated ones, tend to hydrolyse in the presence of water and moisture, forming hydrochloric acid which attacks the metal container or the work. Stainless steel, containing about 24 pct chromium and 10 pct nickel with a little molybdenum, offers the best resistance to attack from HCl.

In using chlorinated solvents such as trichlorethylene or perchlorethylene, escape of vapor from the machine must be avoided. Watercooling or condensing apparatus must be checked often for temperature and proper circulation to properly condense the turbulent rising vapors and to keep them within the apparatus.

Alkali etching solutions are best contained in nonmagnetic stainless steel to avoid possible sparking when a rack or metal object strikes the tank in the presence of hydrogen. Wetting agents which produce low foam help to reduce spray but they do not eliminate the spray of the etched aluminum as it emerges from the treating tank. Therefore, both edge and overhead venting should be used.

### **Brightening has new meaning**

Material for containers for acid solutions will depend on the base acid. Sulphuric acid requires lead-lined tanks. If it is used at temperatures below 150°F, rubber or synthetic rubber liners will do. Hydrofluoric acid requires polyethylene as a liner. Low-carbon steel can be used for chromic acid. Phosphoric-nitric acid combinations require 18-8 stainless steel types 304 or 347. Nitric acid indicates the use of 18-8 stainless types 302 or 304. Copper is used for phosphoric acid.

Nitric acid, hydrofluoric acid or combinations of these should be carefully vented to avoid accumulation of nitric oxide fumes from the action with certain metals. Chromic acid or sulphuric acid should also be vented to eliminate spray. Certain chemicals which act as solution blankets hold down this spray satisfactorily.

The terms etching, bright dipping, pickling, and brightening with regard to metal surface treatments, are often used synonymously. Recently, electrolytic and chemical brightening have taken on a different and significant meaning in contrast to the old accepted meanings. In

electrolytic and chemical brightening, finishes resemble a mirror and have a high degree of specular reflectance.

Aluminum which is polished and buffed to a mirror finish (mechanically) may not have a high degree of total specular reflectivity. While it may appear bright to the eye, fine surface deviations caused by the polishing and buffing wheels may result in low specular reflectance when tested by a reflectometer. A similar piece polished electrolytically or chemically can be made to have both.

### **Etching improves reflectance**

Etching certain aluminum alloys in solutions of caustic soda often improves reflectometer reflectance. Etching in solutions of caustic soda and sodium bifluoride or chloride further improves this type of reflectance. Etching in solutions of caustic soda and sodium nitrate also improve reflectance. Etching in solutions of caustic soda and sodium nitrate with sodium gluconate increases reflectance to a higher degree.

Other agents, when added to solutions of caustic soda, create good reflectance on aluminum. However, none seem to approach the visual and reflectometer finishes resulting from acidic electrolytic polishing or from acidic chemical brightening.

Acidic electrolytic polishing or brightening results in visual and reflectometer values of a high order. This method has its limitations due to throwing power, electrical controls and critical chemical control. In using fluoboric acid, the aluminum is commonly made the anode in an electrolytic cell.

Chemical brightening with concentrated acids seems a better approach. Solutions of concentrated phosphoric acid plus small amounts of nitric acid at elevated temperatures and in a very short time produce beautiful visually reflective effects together with a high degree of reflectometer specularity.

Chemical brightening employs solutions that are controllable and give consistent results. Methods have been developed to eliminate the continuing etch between the chemical brightening dip and the first water rinse. Finishes can be applied using a single bath composition and temperature. Baths have long life and require minimum control.

Solutions containing small amounts of hydrofluoric acid, with nitric or phosphoric acid, brighten some aluminum alloys well from a visual and reflectometer viewpoint. However, like alkali brighteners, they are difficult to control.

This is the second article of a two-part series, the first of which appeared in last week's issue. Part I describes some of the many treatments for obtaining desired surface finishes on aluminum, including bright finishing, chemical oxide coatings, coloring, preparations for plating and painting and others.

## Cold Forming Methods Save Materials, Lower Processing Costs

By K. W. STALKER,  
Supervisor, Jet Engine Dept.,  
General Electric Co.,  
Evandale, Ohio

♦ Rapid growth of many new processes can be attributed directly to savings in materials and production costs through better forming methods . . . Among the casting processes are sand, lost wax, die and shell.

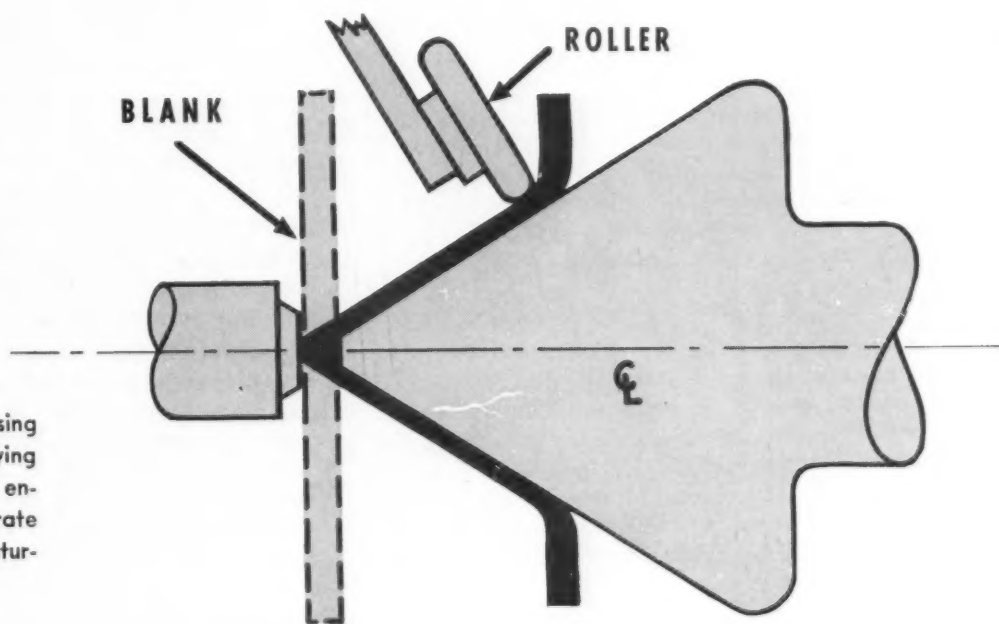
♦ Hot forging and extruding of metals form other segments of this important trend . . . Now, cold plastic deformation under high pressure is taking a prominent place among these processes.

♦ MANAGEMENT and engineering staffs are placing special emphasis on manufacturing methods which give maximum material utilization and minimum production cost. This trend is growing rapidly through the use of stampings, castings, forgings, extrusions, and more recently, cold plastic deformation.

Sand, lost wax, die and shell casting have contributed greatly to shaping metals without loss of material. More recently, powder metallurgy has enabled parts production with good use of material. It is now possible by powder metallurgy to convert sponge titanium directly into parts, using material in nearly the same ratio as in melting the sponge and converting it to bar stock.

Working of many metals improves the strength and toughness of the parts produced. Hot forging works on the principle of plastic deformation to shape metals to the desired contours. As the process became more precise,

COLD FORMING, using a mandrel and applying cold rolling principle, enables making accurate contours without fracturing the metal.





many parts were forged to close dimensions without subsequent machining. Other parts were forged to finished dimensions with only critical dimensions machined after forging.

Rapid growth has occurred recently in the use of extrusion of metals to produce parts. Many difficult-to-machine parts are being successfully extruded, and in the light alloy field, large tonnages of trim, shapes, and forms are being hot extruded. Many steel companies are working on the process and some are already using it to produce tubing, bar, and shapes of ferrous materials with considerable improvement in material utilization.

### Processing without heat

A more recent trend in metalworking is to use plastic deformation to produce finished parts without resorting to high temperature. This trend began with hammering and coining the more ductile materials such as copper, silver, and gold. With more power available to the metalworking industry, the tougher-to-form materials could be cold formed to size without applying heat.

Microstructure analyses of stressed parts also shows that metals with flow under compression, without failure, beyond their tensile elongation. A more difficult phase of producing parts by compression was the development of methods of applying force and still allowing the metal to flow. A common method of cold forming is the cold rolling process as applied to sheet stock production. The same technique can now be used to produce finished parts with varying geometry.

Using the principles of rolling metal, many parts can now be made without further finishing. Using forces of approximately 200,000 to 300,000 psi, it is possible to cold form metal without fracturing. By using a die or mandrel, it is possible to control accurately the contour of sheet material in making a cone with reduced wall thickness. No welding, machining or finishing is required.

The principle of rolling metal against a mandrel can also be applied to cylindrical parts. The blank can be formed from a cup, tubing, rolled and welded rings, or cast rings. The roll is again applied as in a cold-rolling strip mill, but on a much smaller scale.

### Device forms irregular shapes

Irregular shapes can be produced by using shaped mandrels, contoured rolls, or a combination of both. If internal irregularities are required, the mandrel may be segmented for removal after forming. If the external shape can be traced, contouring attachments such as those for controlling the tracing tool on a duplicating lathe or milling machine can be used to control the roll.

If a product requires changing cross-sections,

but the basic geometry is flat, the principle applied to sheet metal production can be used. The tableware industry has developed this process to a high degree of perfection for rolling knives and spoons to the required varying thicknesses.

During World War II, Germany used this process to make compressor blades for aircraft gas turbines. The blades were produced with excellent surface finish and material utilization. Leading American jet aircraft engines are now producing blades by this cold rolling process.

As the concept of compressive forces to make heavy reductions in metal became better understood, more drastic reductions were made without fracturing the metal, and giving the desired surface finish and accuracy. The German aircraft industry, for example, produces the cooling fins on the cylinder barrel by roll forming instead of machining as has been the practice in this country. This principle can be adopted to reduce cost and conserve material.

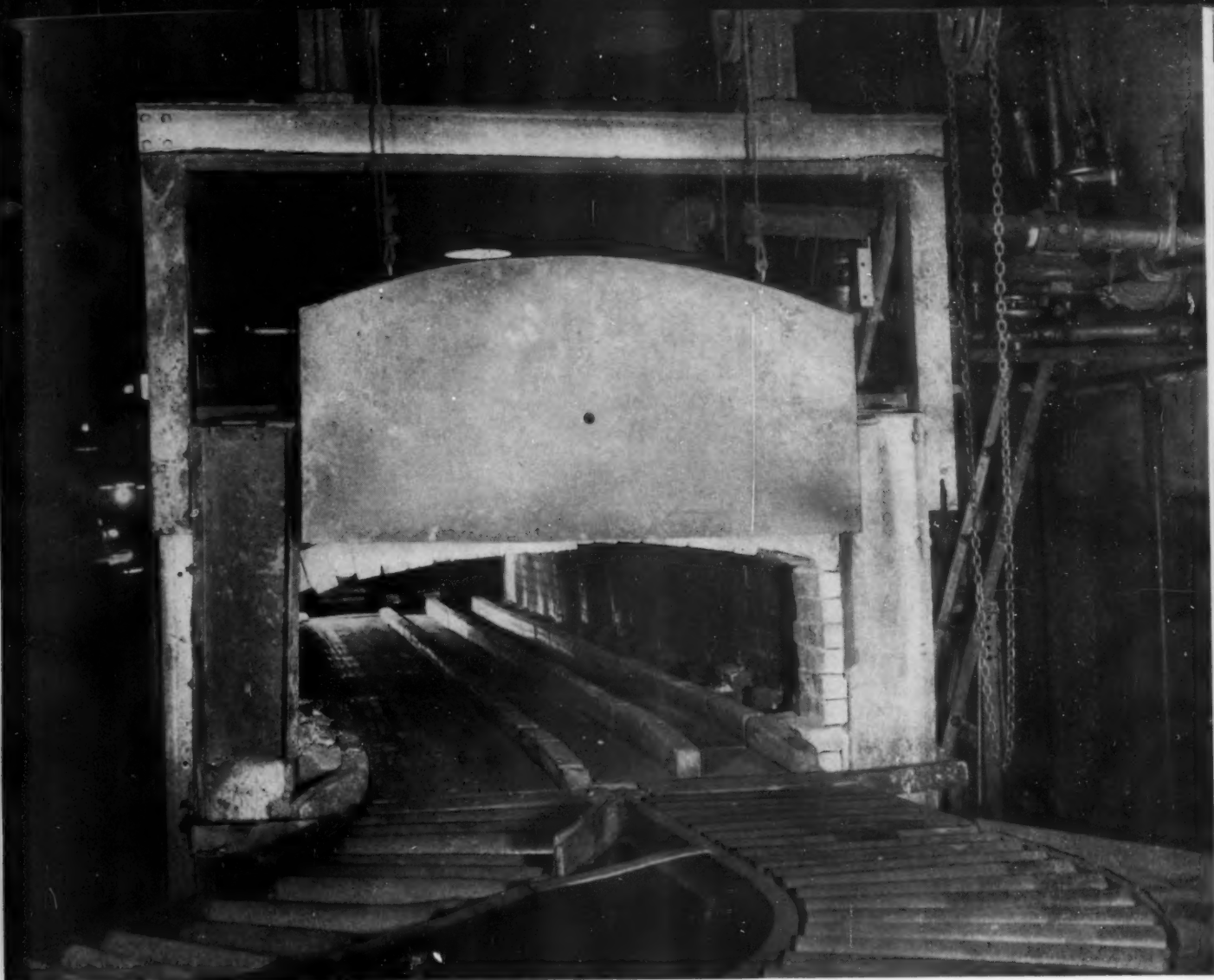
Presently, American industry is developing other techniques of producing such complex shapes as gear teeth and splines by cold forming. Various methods are used, but the aim in each process is to produce a spline or gear tooth to size without machining, with a good finish, and with an improvement in blank hardness.

It is common practice in this country to produce fasteners by cold forming methods. The stock is generally round bar or rod which is cold headed and the threads rolled to produce the most accurate and strongest product at the lowest cost. The cost differential and material saving for cold formed bolts and screws serve as guide posts for further efforts in metalworking. Even bolts of difficult-to-work materials are formed to size without subsequent finishing.

### Industry eyes potential

The American machine tool industry, recognizing the potential of cold forming, is introducing new lines of equipment to produce irregular shapes without machining. When more of this equipment reaches the market, it is expected that industry will make greater use of cold forming and benefit by its advantages—minimum machining, maximum material utilization and minimum cost.

Industry is rapidly accepting manufacturing processes which put more emphasis on producing parts rather than on making chips. In many products made by the plastic deformation method, industry will get a stronger part with better surface finish and with only a small reduction in elongation. The concept of reducing cost and improving quality by chipless production is making great gains because chips are expensive products.



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However, the Alloy Rails couldn't keep pace with the silicon carbide. They grew and twisted, and the furnace had to be shut down repeatedly for rail repairs or replacement. It was obvious that this was not "normal" maintenance because of the excellent condition of the silicon carbide.

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## TECHNICAL BRIEFS

### ROUTING: More Accurate Holes

Template holes cut with greater accuracy and in less time by turning form block and using novel router guide. . . Sanding and filing operations reduced.

By turning the form block and the use of a novel router guide one company is cutting holes in templates more accurately and is decreasing the time required for the operation.

The Temco Aircraft Corp., Dallas, Texas, has formerly used flycutters for roughing out holes in template blocks then filing and sanding to finished dimensions. Now a screw type guide head is attached to an Onsrud tilting arbor router and holes are cut to exact size in one operation.

#### Moves In Circular Pattern

The router guide's most unusual characteristic is that it rotates the form block in a circular pattern around the stationary router blade to make the hole. Normally the fly-cutter moves and the form block remains stationary. This reversal of procedure gives the new router guide its accuracy.

Basically, the attachment consists of a 9-in. vertical shaft which is held by the screw-type guide head, a 13-in. crank attached horizontally to the top of

#### WANT MORE DATA?

You may secure additional information on any item briefed in this section by using the reply card on page 80. Just indicate the page on which it appears. Be sure to note exactly the information wanted.

the shaft, and a 6-in. track attached horizontally to the bottom of the vertical shaft.

#### Travels Along Track

The tapered point travels along this track by means of a screw traverse. A 6-in. scale on one side of the track is graduated in tenths-of-an-inch. A circular scale at one end of the track is graduated in thousandths-of-an-inch. Indicators on both of these scales move along with the tapered point when the two handles revolve to actuate the screw traverse.

To set up for routing a hole with a 2-in. radius, the tapered point is lined up with the 2-in. marker on the 6-in. scale. This puts the point precisely 2-in. from the back side of the router blade.

If the radius required were 0.003 in. more than 2 in., the 2-in. adjustment would be made on the large scale. The circular scale would be used to add in the thousandths.

#### No Sanding Necessary

Once the tapered point is properly positioned, it is lowered into the pilot hole of the template to be routed, where it automatically centers; then the crank at the top of the vertical shaft is turned to form a perfect circle over the router blade. The cut is so exact that no sanding is necessary. The attachment is saving an average



Cuts accurate holes . . .



## TECHNICAL BRIEFS

of 15 minutes per form block. It is designed to rout holes up to  $8\frac{1}{4}$  in. in diam. Any type of form block hole that is located by means of a pilot hole can be precision routed with this attachment.

### Melting:

**New furnace features Rollaway cover, fast pumpdown.**

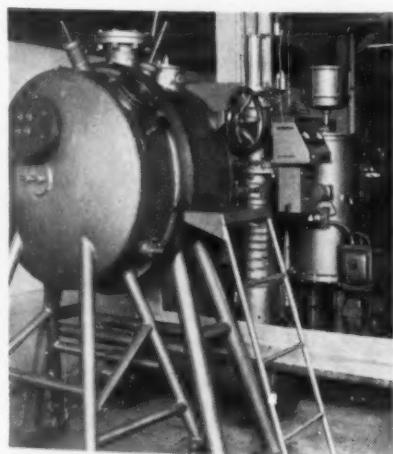
A new laboratory high vacuum melting and casting furnace is now available that features fast pumpdown and easy access to the melting chamber.

The 5 to 50 lb capacity package unit including furnace, all electrical equipment and controls is being built by Consolidated Vacuum Corp., Rochester, N. Y., a subsidiary of Consolidated Engineering Corp., Pasadena, Calif.

This laboratory furnace was designed to meet the increasing need of metals producers to investigate the effect of high vacuum processing on old and new alloys, particularly the high temperature alloys now in great demand by aircraft engine manufacturers.

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**Has fast pumpdown . . .**



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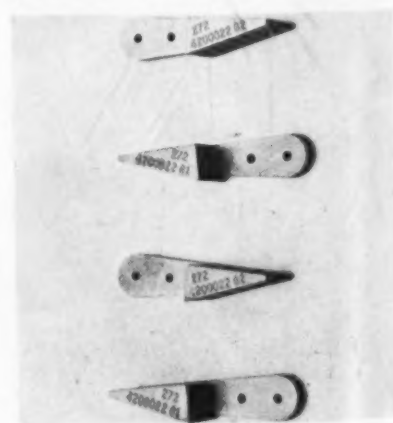
**Investment process cuts production cost 50 pct.**

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Spacer blocks are now investment cast of 356-T6 aluminum alloy for the Martin Co. by the National Precision Casting Corp., Clifton Heights, Pa.

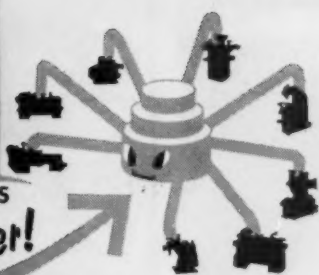
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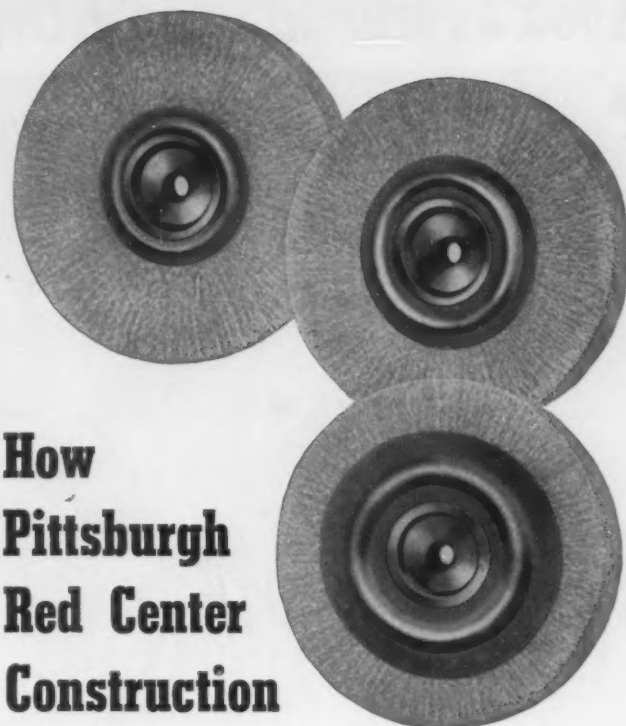
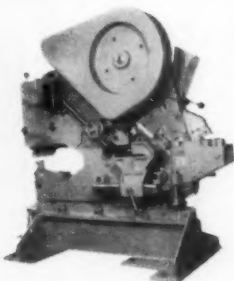
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IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED



# Look overhead...see "NORTHERN"



**NORTHERN** *CRANES for severe service!  
for continuous operation!  
for safety and economy!*

The 40-ton NORTHERN SUPER CRANE shown is one of several Northern cranes operating in the Huntington Works of the International Nickel Company.

From drawing board to assembly floor no effort is spared in building uninterrupted service into NORTHERN HEAVY DUTY SUPER CRANES. They are built to stand rough handling, overloading and continuous operation. Mechanically, structurally and electrically they offer the maximum in safety and operating efficiency.

Northern Cranes are backed by over 55 years experience in designing and building cranes for steel mills, metal fabricating plants, automobile plants, paper mills, electrical manufacturers, railroads, and many other industries.

Let us send you  
Bulletin SE-108

**NORTHERN** **CRANES—HOISTS—TRAVELATORS**  
**NORTHERN ENGINEERING WORKS**  
210 CHENE ST., DETROIT 7, MICH.

## TECHNICAL BRIEFS

### Polishing:

Preview new developments  
in metal finishing.

A preview of tomorrow's polishing departments in automobile and appliance manufacturing—and the latest in production grinding and finishing machinery for the metalworking industry—was witnessed by more than 2500 mid-western production executives at the new Behr-Manning Metal-finishing Show in Chicago, recently. Some 72 new machine tools using modern coated abrasive belts were shown by 38 manufacturers.

More than 50 technical specialists from machinery and coated abrasive manufacturing firms demonstrated equipment and offered advice on specialized metal-finishing problems.

Workpieces ranging from auto bumper guards and garnish molding, through die castings and sheets were worked on at the show.

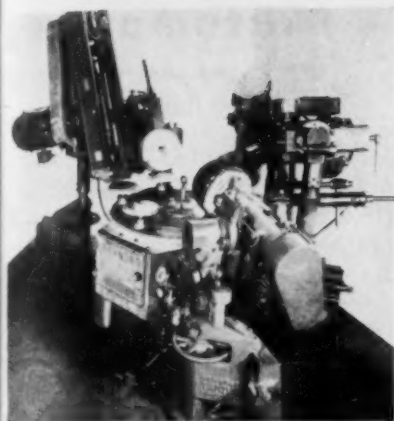
**Holds to 0.0005 in.**

Marking a new approach to machine tool versatility with the coated abrasive belt, one of the biggest (30 in. wide) microfinishers yet built, was shown. This machine prepolishes steel strip before forming rather than after.

It combines twin-belt surfacer which will do both sides of flat



**Fixture speeds work...**



### Grinds and buffs parts . . .

workpieces at once in continuous line production, and a grinder which will hold tolerances to half of one thousandth of an inch in sizing webs of rubber, mica, laminated plastics, masonite and other non-metallics.

Ingenuity in small tools for precision grinding and polishing has resulted in development of several idler-and-extension attachments for adapting existing grinding spindles to contact-wheel and belt usage.

### Backstand Idlers In News

Big news in backstand idlers is a unit with a 6-in. macerated plastic pulley adjustable for tension and tracking from the operator's normal working position. It employs a double-lever arc method of adjustment for tracking which doesn't strain the belt in any way.

Much equipment has been designed for automated production.



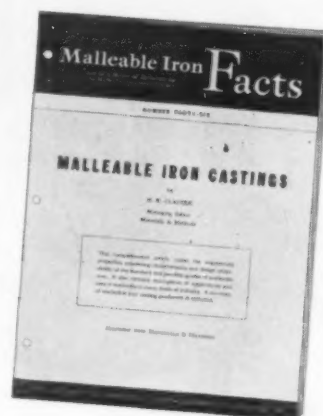
Note belt arrangement . . .

## ...How about Malleable?

### Versatile Castability Permits Wide Freedom of Design

The ability of malleable iron to be cast into intricate shapes and close to final form provides the design engineer with an extremely useful ferrous material. Complicated and expensive assemblies can often be combined into one easily machined, tough casting. Drilling and boring operations are often eliminated for further savings.

Whether you are designing new products or reviewing present production keep malleable in mind. Call a malleable foundry and go over your products with their engineers. They can give you information and suggestions that help you design better products that can be made at lower cost.



**Free Design and Application Data to Help You Design with Malleable**

This issue of Malleable Iron Facts contains valuable data on grades, design and application of malleable iron to aid the design engineer.

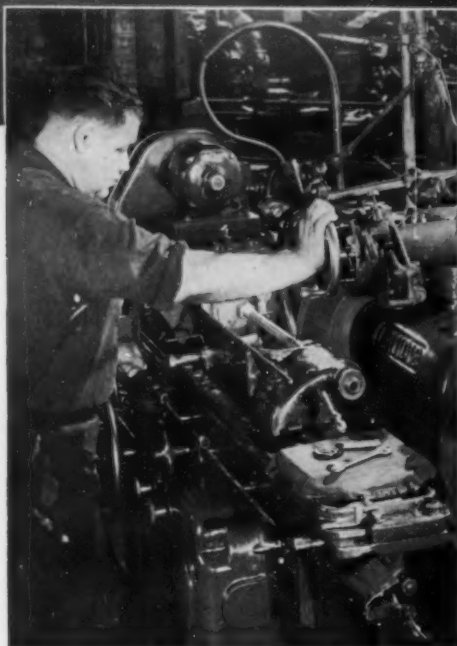
Ask your malleable castings supplier for copies or write to the Malleable Founders' Society



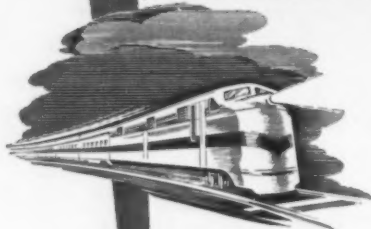
1800 Union Commerce Building

Cleveland 14, Ohio

# For **DEPENDABILITY**



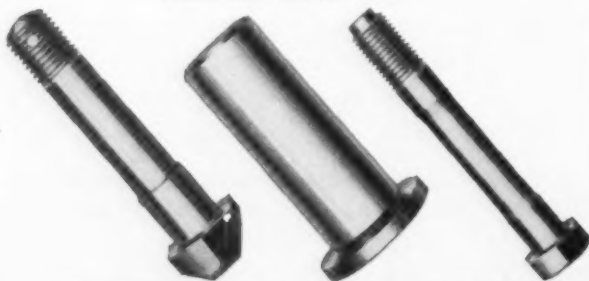
## **ERIE** the correct fastener for the job!



Erie Fasteners are in wide use by the nation's leading builders of Railroad Equipment.

You can rely on over 40 years of experience in producing bolts, studs and nuts designed to withstand the effects of high and low temperatures, high stresses, fatigue and corrosion. Modern facilities enable our skilled craftsmen to produce to your specifications bolts, studs and nuts, precision machined and heat treated in carbon, alloy, stainless steel and non ferrous metals.

These Erie Products prove their quality every day in the railroad, chemical, petroleum and automotive industries; on farm, construction and industrial equipment and heavy machinery. Send your design and material specifications to us . . . we will make for you the Correct Fastener for the Job.



**ERIE BOLT and NUT CO.**  
ERIE • PENNSYLVANIA  
STUDS • BOLTS • NUTS  
ALLOYS • STAINLESS  
CARBON • BRONZE

*Representatives in Principal Cities.*

## TECHNICAL BRIEFS

### **Automation:**

**Packaged control systems help small industrial firms.**

Packaged control units engineered and built to specifications from standard stock components are helping to automate machines for many firms who can't spare the engineering brains to do the job.

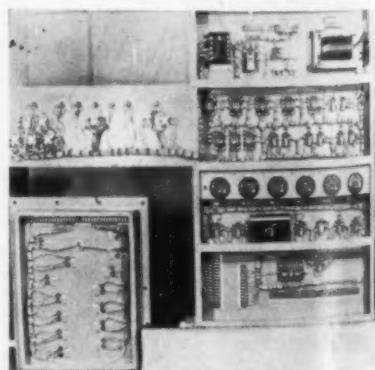
Some packaged control systems supplied by the John C. Whiddett Co. of Bala-Cynwyd, Pa., have helped in changing the processing of fruit from "batch" to "continuous" and have converted metalpolishing machines from manual to automatic. Others have supplied the brain and nerve systems for counting, controlling and packaging of materials.

### **Use Standard Parts**

These packaged control systems, which can be designed for almost every machine or materials handling process, provide relatively low cost automatic controls.

They are composed of pre-assembled collections of standard control devices, such as relays, starters, pilot lights, switches and measuring devices, all interwired to a terminal block, complete with wiring diagrams, instructions and housing, which forms a unit that accomplishes the job previously performed manually.

In some cases, the systems may consist of a simple electrical device to control one machine. In the more complicated applications electro-mechanical and pneumatic-hydraulic systems are combined.



**Unitized automation . . .**



## New Technical Literature

### Catalogs & Bulletins

#### Ball bearings

The complete line of Split ball bearings is covered in this new catalog. Load and speed ratings, design data and dimensions are given. Among items shown are single and double row ball bearing bushings, fully split heavy duty pillow blocks, and fully split heavy duty ball and roller bearings. Design features are covered. *Split Ballbearing Corp.*

For free copy circle No. 1 on postcard, p. 80.

#### Lubrication control

Air-operated centralized lubrication, the automatic application of fluid lubricants to bearings on individual industrial machines at predetermined intervals, is the subject of this new booklet. Mechanical, electrical and manual control are discussed. Advantages of the system are listed. *Lincoln Engineering Co., Industrial Div.*

For free copy circle No. 2 on postcard, p. 80.

#### Electrodes

Murex stainless steel electrodes and bare wire are covered in this new booklet. Electrode coatings, stainless steels and corrosion resistance, the chromium nickel austenitic steels, austenitic electrodes, low carbon electrodes, and techniques and procedures are discussed. Tables and charts give more information. *Metal & Thermit Corp.*

For free copy circle No. 3 on postcard, p. 80.

#### Fastener

The new Tuff-Tite multi-purpose fastener with a one-piece metal head and pre-assembled neoprene washer is featured in this new brochure. The brochure explains how the design and components of these fasteners prevent leaks, protect surfaces, absorb shocks and stop squeaks. Listed are several typical applications. Specifications are included. *Townsend Co.*

For free copy circle No. 4 on postcard, p. 80.

#### Testing

Norelco Portaflux, a new portable magnetic particle test unit, is discussed in this booklet. The latest and most economical method for checking ferrous metal objects for

**FOR YOUR COPY**  
Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, page 80.

surface discontinuities is described. The booklet explains how the method is used in the automotive, aircraft, rail and other industries. The booklet describes the basic principle on which magnetic particle testing is based. Inspection procedures and how the Portaflux is operated are covered. *Mount Vernon Div., North American Philips Co., Inc.*

For free copy circle No. 5 on postcard, p. 80.

#### Electric hoists

The Yale Cable King line of wire rope electric hoists is described in this new brochure. The brochure contains illustrations, cut-away photographs, charts and diagrams with information on electric hoisting equipment. *The Yale & Towne Mfg. Co.*

For free copy circle No. 6 on postcard, p. 80.

#### Wax cutting

Cutting and grinding with Johnson's Wax cutting fluids is the topic of this new booklet. The booklet describes the advantages of wax in metalworking as well as the comparative machinability rating of various steel grades. *S. C. Johnson & Son, Inc.*

For free copy circle No. 7 on postcard, p. 80.

#### Cutters

The complete line of machine knives, shear blades and cutters for the woodworking and steel industries is covered in this new catalog. The catalog describes all types of machine knives and shear blades, straight, circular and irregular. All types of blades are shown. *Wapakoneta Machine Co.*

For your copy write on your company letterhead to address shown on reply card.

#### Turret punch press

The Turret punch press for small holes in heavy plate is described in this leaflet. This machine punches 12 different sizes holes without replacing dies, according to the leaflet. The operation of the press is described. The press is shown. Punching pressure, depth of throat, capacity in steel and weight are given. *Industrial Sales Co., Inc.*

For free copy circle No. 8 on postcard, p. 80.

#### Flexaust hose

Flexaust hose and Portovent duct for industrial applications are described in this new bulletin. The bulletin shows the use of screw couplings, soft-end cuffs, and flanges for assembling Flexaust hose in long lengths, attaching it to pipe of varying sizes, connecting to outlets of different shapes, and applying to equipment. The available accessories are discussed. Applications are listed. *The Flexaust Co.*

For free copy circle No. 9 on postcard, p. 80.

#### Deburring

Deburring by pressure blast is the topic of this technical bulletin. The "fineness" of the abrasive, speed of the abrasive stream, and "masking" effect of the water carrier are among subjects discussed. The advantages of this method are covered. *Cro-Plate, Inc.*

For free copy circle No. 10 on postcard, p. 80.

Turn Page

**It costs you money  
to WAIT!**



*that's the penalty  
for continuing  
**WASTEFUL and  
OBSOLETE** hand  
methods that hold down  
profits and production*



**Modernize** your  
assembly department with

**DPS POWER  
SCREWDRIVERS  
and SELECTIVE  
PARTS FEEDERS**

**SPEEDIER ASSEMBLY  
OUTPUT at FAR  
LOWER COST in 1955  
and the years to come**

● Proven beyond question, one of the greatest contributions to modern industry, Detroit Power Assembling Equipment demands your immediate consideration. Start now—Share its advantages with the thousands of the nation's prominent users.

**DPS BOWL-FEEDERS**  
*fill a Special Need!*

● In addition to our popular DPS Barrel Feeder, we offer the DPS Bowl Feeder designed to feed light, fragile parts that might not withstand tumbling. Operates on the VIBRATORY PRINCIPLE... fully automatic. Provides oriented single line feeding to Grinding, Packaging, Inspection and other automatic machines and operations.



**Write today, send sample assembly—Give details!**

**DETROIT POWER SCREWDRIVER CO.**

2811 W. FORT ST.

DETROIT 16, MICH.

## FREE TECHNICAL LITERATURE

### Material handling

The handling and transporting of wheels, axles, housings, etc., with the RC-150, ZA-80 lift trucks and the Hyster "Yardmaster" straddle truck are the topic of this field report. The report is a case history of modern labor-saving handling and storing methods in conjunction with the Hyster models. *Hyster Co.*  
For free copy circle No. 11 on postcard, p. 88.

### Castings

Intricate, small zinc die castings are covered in this new folder. It is possible to produce small quantities of die castings economically with a new process, according to the folder. The facilities of the Page & Hall Mfg. Co., Inc., are described. Designs are shown. *Page & Hall Mfg. Co., Inc.*  
For free copy circle No. 12 on postcard, p. 88.

### Tester

The King Portable Brinell Hardness Tester is covered in this folder. The tester makes standard Brinell tests and can be used as a bench tester or taken to the job, according to the folder. The folder describes how the precision instrument puts a load of 3000 kg on a 10 mm ball and other loads as required. The removable test head, which makes it possible to test parts of any size, is featured. *Andrew King.*  
For free copy circle No. 13 on postcard, p. 88.

### Over-running clutches

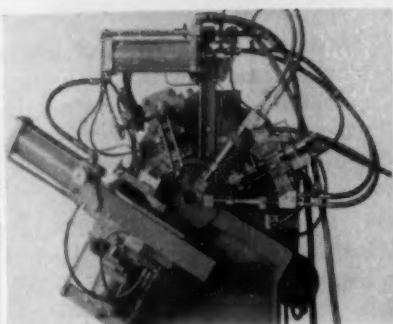
The Formsprag Co. complete line of over-running clutches for over-running, backstopping, and indexing applications is covered in this catalog. Included are photographs, application drawings, and engineering and specification data for each clutch of the six standard lines. *Formsprag Co.*  
For free copy circle No. 14 on postcard, p. 88.

### Digital instruments

A series of five related digital instruments for automatic counting, recording, and control is covered in this new folder. The folder illustrates and describes fundamental facts covering all of these instruments. Applications are discussed. *Brush Electronics Co.*  
For free copy circle No. 15 on postcard, p. 88.

## NEW EQUIPMENT

**New and improved production ideas,  
equipment, services and methods  
described here offer production  
economies...for more data  
use the free postcard on page 80 or 81**



### Hot spinning machine welds and closes tubing

To weld and close one end of a piece of tubing this new machine automatically feeds the tube, heats it to the proper temperature, spins and welds the end to seal it and ejects the piece—all in a matter of seconds. The operator has only to stack the tubes in the inclined rack and take them away when finished. The hot spinning machine

handles tubing up to 3 in. OD, and is designed to use either oxygen-acetylene or induction heating. It comes complete with motors, starting equipment, collet, bushing, valves, cylinders and electrical equipment including transformer for 110 v on pushbuttons and controls circuit. *Modern Machine Tool Co.*  
For more data circle No. 30 on postcard, p. 80.

### Stair cart moves loads up and down stairways

A stair climbing hand truck is said to safely double the load a man can roll up steps and treble the load he can move down stairs or ramps. It is equipped with a special ratchet mechanism which enables it to roll up stairs step by step as the operator pulls a cable drive. Two-wheel safety brakes allow perfect control at all times. Inter-

changeable shoes, sealed ball bearings and steel tube construction are said to assure load flexibility and long life. Large pneumatic tires add to ease of operation and eliminate any marking of steps. Six different models are available. *Valley Craft Products, Inc., Div. of O'Neil-Irwin Mfg. Co.*

For more data circle No. 31 on postcard, p. 80.



### Die-cut pressure sensitive tapes cut masking costs

Die-cut pressure-sensitive tapes have been developed to precisely mask out unusual shapes or to protect holes and apertures during manufacturing operations. Precision cut to the custom made specifications of each masking job, these handy masks assure sharp-

line masking during painting, plating, buffing, polishing, stenciling and sand-blasting. Die-cut masks are supplied in rolls and are mounted on a quick-release paper backing for fast application. *Printed Cellophane Tape Co.*

For more data circle No. 32 on postcard, p. 80.

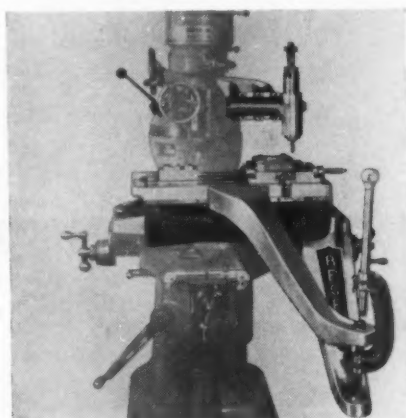
### Tool gives full scale duplication of molds, dies

Time-saving and exact duplication of molds, dies and production parts are claimed for the new Regent duplicator table for Bridgeport and Index millers. The table, suited for plastic, glass, and rubber mold makers, features an effortless fluid motion that insures complete accuracy. Mounted and removed easily, the tool gives full scale duplication of any shape, two or three dimensional, with a capacity up to 6 x 6

in. Built-in micrometers contribute to fast setup of the table, designed especially for the 1/2 and 1 hp models of Bridgeport machines, also for Index No. 55 millers. The table is capable of duplicating parts with one setting and due to its simplified operation, can be handled by inexperienced workers. *J. M. Kalins & Co.*

For more data circle No. 33 on postcard, p. 80.

Turn Page







## Workholding tool saves hours of setup time

Need for special workholding tools individually designed for each different piece of work is often eliminated with the use of the new adjustable, precision Micro-Chuck unit. The tool can be used again and again for holding all sorts of different regular and odd shaped workpieces. The Micro-Chuck and adaptor, the basic tool, attaches

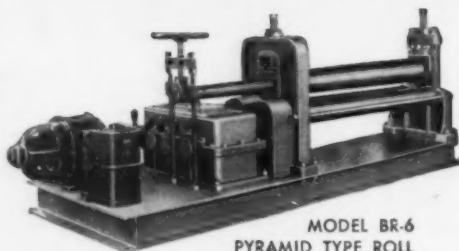
directly to the spindle of a lathe. The face contains a boss on a slide, to which various workholding attachments can be securely locked. Work such as castings or stock to be turned, drilled, or faced, is easily clamped onto the attachment. Micro-Chuck comes in 8, 9 and 12 in. diam sizes. *Scott-Browne Corp.*  
For more data circle No. 34 on postcard, p. 84

# WEBB

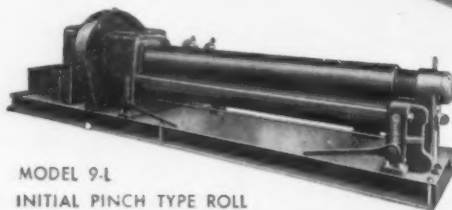
PLATE  
FABRICATING  
MACHINERY

## PLATE BENDING ROLLS

The Webb Corporation offers a complete line of Plate Bending Rolls for the rolling of the thinnest plate up to plate 2½" thick. Offered in a variety of lengths and thicknesses. Constructed for the modern fabricating shop.



MODEL BR-6  
PYRAMID TYPE ROLL



MODEL 9-L  
INITIAL PINCH TYPE ROLL

Two types available: the Initial Pinch Type and Pyramid Type machines. All latest advantages of today's modern machine tools are incorporated, utilizing anti-friction bearings, totally enclosed gear drives. Special forming rolls for culvert pipe, stock tanks and other special shapes available.

### SLIP ROLLS

A complete line of small Sheet Metal Forming Rolls are also available. All power-driven with shaft sizes 3" to 5" for the handling of the thinnest gauge material, up to 8 gauge material. Special rolls for the forming of polished sheets, aluminum and stainless steels can be furnished. Complete catalogues on any size machine furnished upon request; write Dept. E.



SLIP ROLLS  
UP TO 8 GAUGE PLATE

Let Speed **PAY**-The **WEBB** Way!



SLIP ROLLS



PYRAMID TYPE ROLL



INITIAL TYPE ROLL



STEELWORKERS

Also Manufacturers of INDUSTRIAL WEIGHING EQUIPMENT

Since 1881

# THE WEBB CORP.

WEBB CITY, MO., U.S.A.

## Bearing temperatures

Continuous monitoring of bearing temperatures can be obtained and automatic alarms can be actuated when bearing temperatures rise above safe limits through use of a bearing temperature monitor. The system consists of thermocouples installed at the points at which the temperature is to be checked and a



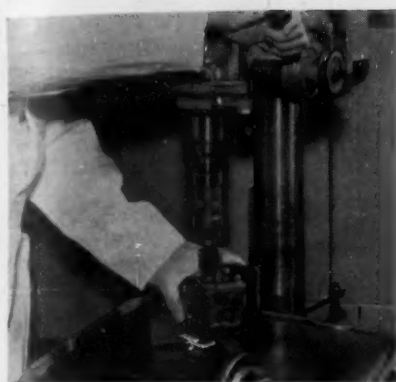
bank of magnetic amplifiers which magnify the feeble electrical output of the sensitive thermocouple millions of times to a level sufficient to actuate an indicator and the alarm system. Forty points may be monitored simultaneously with equipment already produced; number may be increased as required. *Bogue Electric Mfg. Co.*

For more data circle No. 35 on postcard, p. 84.

## Safety helmet liners

Head-O-Gard, a felt liner to be worn under a worker's helmet, is made in all head sizes, 6¾ to 7½, of quality hat felt. Embossed top and side corrugations give added protection against irritations caused by harness inside helmet. Ventilating eyelets are optional. *Louis A. Gann Mfg. Corp.*

For more data circle No. 36 on postcard, p. 84.



### Powered torque wrench has automatic release

Pow-OR-Tork wrench is a new type magnetic release torque wrench with fully automatic accurate release. Operating first as a nut runner, Pow-OR-Tork runs the fastener down, then functions as a true torque wrench until fastener reaches the pre-determined torque. It then automatically and completely releases. Its continuous and fully automatic operation elimi-

nates inaccuracies. Errors resulting from misreading of gages and other human elements are also eliminated, as well as distortion and breakage of parts caused by over or under reaching of desired tension. The wrench is available in mechanically-supported single and multi-spindle wrenches, to any bolt pattern. *Ohlsson & Rice, Inc.*

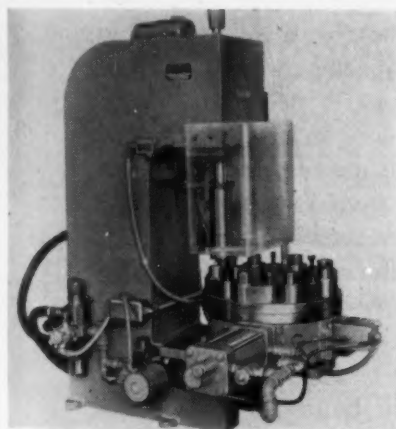
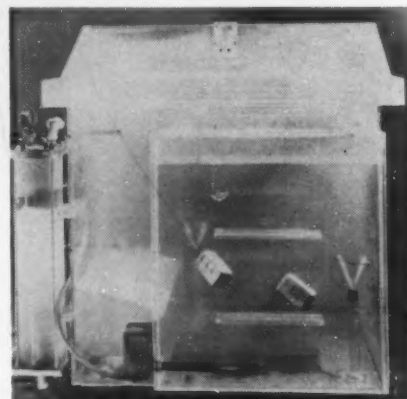
For more data circle No. 37 on postcard, p. 80.

### Picture-window visibility aids corrosion test

An advance in accelerated corrosion testing of finishes and coatings is achieved by the redesigned Singleton H-T Sincolite test cabinet. Clearer, picture-window visibility during tests is made possible by the insulating effect of flat-panel H-T Sincolite waterjackets housing the two new electric heaters located front and rear on the outside of the cabinet. Progress of tests can be observed through these

windows without opening lid, interrupting the process or handling specimens. This offers a special advantage in short tests of black oxide finishes and other less-protective coatings. More uniform temperatures are maintained throughout. Accuracy-factors are said to enable users to claim test results within 10 pct of absolute duplication. *G. S. Equipment Co.*

For more data circle No. 38 on postcard, p. 80.



### Increases production 50 pct with operator safety

Two products are combined in this production setup. Used to press together two parts of a steering knuckle, these tools are said to have increased production from 1200 pieces per hr to 1800. An 8-station, 15-in. diam index table is tooled up and mounted on a C-300, 5½ ton press. An electrical circuit synchronizes action of press and table and makes operation fully automatic. Press can be operated when table is locked in posi-

tion. Table indexes only on return stroke of press. The operator places the pieces on the fixture in front of the transparent guard where there is no danger of injury. Parts are then indexed into position and pressed together. The assembly is removed by a mechanical hand and chuted into a container. Tooling, electrical equipment and piping are furnished by manufacturer. *Air-Hydraulics, Inc.*

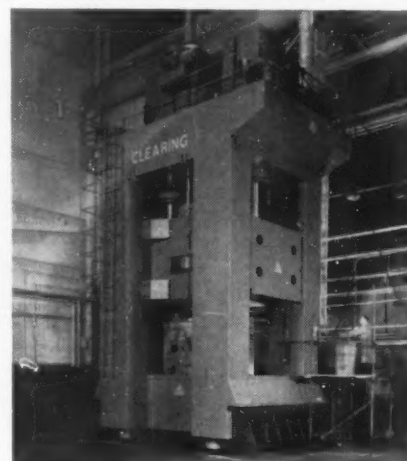
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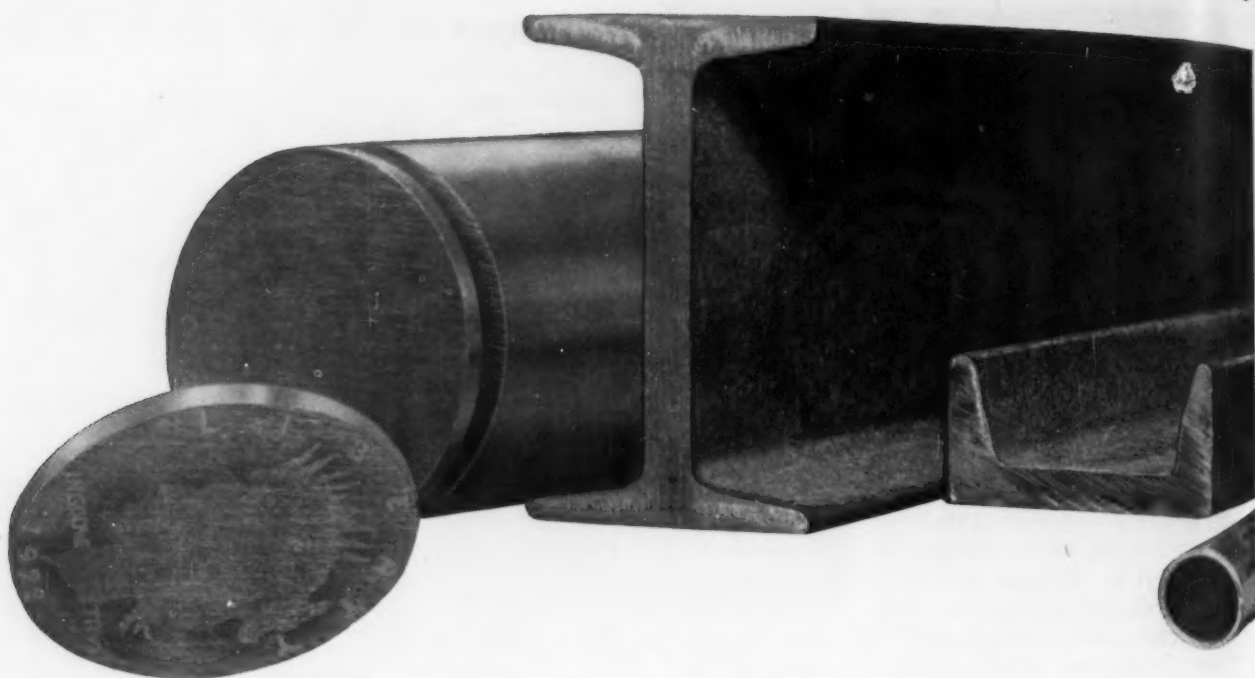
### Giant press will trim large aluminum castings

This 2000-ton press, shown under test, was designed by Clearing engineers to trim massive aluminum forgings. The great size of the parts to be handled on this machine required a press in which continuous pressure is exerted over an unusually long stroke. Since forgings vary greatly in size, it was necessary to permit quick and easy adjustment of the stroke length. These two characteristics are inherent in the design of a hydraulic press. The machine is of

the housing type with pre-loaded tie-rod frame construction, considered most practicable since it best resists the effects of off-center loading—a standard condition of operation in trimming work. A special system for taking care of break-through shock is built into this press. The press can be operated by one man. Pulpit-like control panel gives him instant supervision of all operating circuits. *Clearing Machine Corp.*

For more data circle No. 40 on postcard, p. 80.





## What do steel inventories REALLY cost?



You might be shocked to find how fast the hidden costs of carrying steel inventories add up! We know because steel inventories have been our stock in trade for over a hundred years.

But you don't *have* to tie up plant space and capital in steel you won't use for many weeks—may never use if products or markets change quickly. You don't *have* to lay out cash for cutting and handling equipment, incur unnecessary scrap loss, or divert manpower to unproductive inventory work.

Instead, you can hold your own inventories to a practical minimum and draw on Ryerson inventories as current requirements arise. At Ryerson you have the world's largest stocks at your disposal—plus unequalled facilities for preparing steel to your order—so you can get delivery of any kind of steel in practically any quantity, within a few hours.

That's why we urge you to consider *all* your costs when setting inventory policy. And let Ryerson help you release more of the money in steel inventories for profit-producing opportunities. Our inventory experience is at your service.

## RYERSON STEEL

*Principal products in stock: bars, structurals, plates, sheets, tubing, alloy and stainless steel, reinforcing steel, etc., also machinery and tools*



JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CHARLOTTE, N. C. • CINCINNATI • CLEVELAND  
DETROIT • PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



## The Iron Age SUMMARY...

**Production in 1954 fell 20.8 pct below the alltime record of 1953 . . .**

**But 1954 is closing stronger than 1953.**

**Production . . .** Steel production in the United States during 1954 slumped 20.8 pct below the alltime record established in 1953. But this year end finds the market strong, whereas a year ago operations were headed down.

THE IRON AGE estimates raw steel production this year at 88.3 million net tons, equal to an average operating rate of 71.0 pct of rated capacity. Last year's record production was 111.6 million tons, and the operating rate averaged 94.9.

**Inventory Factor . . .** One of the big reasons for the sharp decline in steel output this year is the inventory factor. THE IRON AGE estimates that steel consumption exceeded production by about 7 million net (ingot) tons, as consumers literally lived off the shelf. Steel inventories are now believed lower than at any time in postwar years, except right after strikes.

**Outlook . . .** This means that steel production in 1955 will have to be increased by at least 7 million tons just to take care of manufacturing at the 1954 rate. But business of many steel users is already improving. This will necessitate some increase in steel inventories to take care of increasing manufacturing schedules. Also the tightening market and extended steel delivery

have made current inventory levels of many steel users no longer safe. Steel wage bargaining in the spring will provide steel users still another incentive to increase steel stocks as a buffer against a possible strike.

Adding these factors, THE IRON AGE estimates steel production in 1955 will amount to about 100 to 105 million net tons. This would place the average operating rate at about 80 to 85 pct in terms of 1954 capacity.

**Small Dip . . .** This year the production dip caused by the holidays is expected to be smaller than usual due to strong demand from steel consumers. Steelmaking operations for this week (including Christmas) are estimated at 74.0 pct of rated capacity, down 8 points from the previous week. A year ago operations slumped 20.5 points during Christmas week.

**Demand . . .** Faced with a growing backlog of orders and strong consumer demand for delivery, many steel firms are paying extra to keep furnaces operating during the holidays. Production on steel finishing mills will be curbed more than steelmaking furnaces.

Some consumers of cold-rolled sheets and galvanized sheets are freely booking orders 120 days in advance of delivery.

### Steel Output, Operating Rates

	This Week†	Last Week	Month Ago	Year Ago
<b>Production</b> (Net tons, 000 omitted)	1,756	1,950	1,915	1,444
<b>Ingot Index</b> (1947-49=100)	109.3	121.4	119.2	89.9
<b>Operating Rates</b>				
Chicago	83.0	87.5	89.5	74.0
Pittsburgh	69.0	78.0	77.0	76.0
Philadelphia	65.0	73.0*	70.0	72.0
Valley	62.0	80.0*	79.0	48.0
West	85.0	85.5*	84.0	74.0
Detroit	84.0	92.0	88.0	64.0
Buffalo	100.0	100.0	97.5	52.0
Cleveland	92.5	89.5	80.5	45.5
Birmingham	67.0	67.0	64.5	80.5
S. Ohio River	90.0	81.0	88.0	86.5
Wheeling	64.0	88.0	81.0	76.0
St. Louis	63.0	79.0	82.0	64.0
Northeast	63.0	75.5*	66.0	67.0
<b>Aggregate</b>	74.0	82.0	80.0	65.0

\*Revised. †Tentative

### Prices At A Glance

(cents per lb unless otherwise noted)

	This Week	Week Ago	Month Ago	Year Ago
<b>Composite prices</b>				
Finished Steel, base	4.797	4.797	4.797	4.634
Pig Iron (gross ton)	\$56.59	\$56.59	\$56.59	\$56.59
Scrap, No. 1 hvy (gross ton)	\$32.83	\$32.00	\$32.83	\$30.00

### Nonferrous

Aluminum, ingot	22.20	22.20	22.20	21.50
Copper, electrolytic	30.00	30.00	30.00	29.75
Lead, St. Louis	14.80	14.80	14.80	13.30
Magnesium, ingot	27.75	27.75	27.75	27.00
Nickel, electrolytic	67.67	67.67	63.08	63.08
Tin, Straits, N. Y.	87.50	89.375*	91.00	84.25
Zinc, E. St. Louis	11.50	11.50	11.50	10.00

## Oil Country Could Get Tight

**Producers fear repetition of last spring's order traffic jam . . . Oil companies have lived off a comfortable backlog for months . . . 1955 drilling demand good.**

♦ **SOME PRODUCERS** of oil country goods are getting the jitters over failure of consumers to place advance orders. The reason: they are afraid of a traffic jam when orders finally begin to pour in tagged for shipment yesterday. Same thing happened last year.

The oil companies have been sitting on their hands and living off inventory in recent months. Combination of increased capacity and comfortable stocks brought this about, even though drillings this year are as good as last. Drilling plans for next year also look good and producers know the demand will be there. They don't like the idea of last-minute buying, frantic scheduling and shipping.

Linepipe producers are in pretty much the same shape. Any number of big pipeline projects are pending and probably will break in the first quarter. Meanwhile, business is slack. When ordering begins, everybody will be in a hurry.

National Steel Corp.'s action in reducing the Detroit price differential from \$3 to \$2 per ton caused a brief flurry. Best guess was that National was merely making a strategic, competitive move that was more or less expected in the future. At any rate, it now costs producers outside Detroit \$1 per ton more to meet competition in the auto capital. The move largely affects sheets and strip. Pittsburgh mills, for example, must now absorb over \$4 per ton in freight.

Otherwise, the market shows no important change from last week. Flat-rolled products are shouldering the burden. Assistance from other directions—plates, light structurals, linepipe—is not expected until some time early in the first quarter.

**SHEETS AND STRIP . . .** Cold-rolled sheets are on an unofficial allocation basis in one form or another. The situation is particularly noticeable in **Chicago**, where mills are screening orders for second quarter. They're up against efforts by some warehouses to multiply normal buying pattern. In **Cleveland** mills are holding space in March for regular customers. While gaining strength, hot-rolled sheets are not a red-hot item as yet. It's still relatively easy to get on the order books, although deliveries are extended to 4-6 weeks in some centers. Situation is not nearly that good generally. **Detroit** is talking about a possible leveling-off in the sheet market in the first quarter after new-model push begins to lose its steam. February may be the key month.

**GALVANIZED SHEETS . . .** Demand gives no sign of abating. An **Eastern** producer reportedly is talking about allocations for third quarter. Delivery schedules extended 10 weeks at minimum in **Chicago**, where 80-90 days is commonplace.

**BARS . . .** The market is relatively easy despite some signs of strength. **Detroit** is into January. **Chicago** on 2-4 week delivery although volume has improved and should continue to advance. One **Chicago** mill has as much January-February business

booked as December's total. The **East** reports improvement in both carbon and alloy. So does **Pittsburgh**.

**STRUCTURALS . . .** Demand has either leveled-off or weakened slightly. This is partly due to seasonal influences. Producers are still waiting for the railroads to do something. Unless the rails can snap out of their lethargy, the market probably will be listless into the first quarter of next year.

**PLATES . . .** Still dull. The **East** reports a mild increase in tonnage. Same in **Chicago**, where a few car-building orders materialized. Quick delivery can be had anywhere, trade sources report.

**PIG IRON . . .** Business has perked up a little in **Chicago**, where one producer says November was best month of the year; December is off seasonally. In **Cleveland**, they're predicting another competitive year in 1955; supplies will be ample, with increasing imports.

**WIRE . . . Chicago:** Fastener grades and welding rod stock, strong; merchant wire off less than expected; manufacturers' wire holding firm. **Cleveland:** Inventory reduction hurting order intake but December shipments will equal those of November; better market looked for in January. **Pittsburgh:** Merchant and construction products are off; manufacturers' wire is firm.

**STAINLESS, ALLOY . . .** Stainless and alloy business continues to show steady improvement. Greatly increased auto production is the chief stimulus. But business improvement is spread through a variety of manufacturers. Increased production is reflected in electric furnace operations which have risen sharply in the past several weeks. Recent price increases following higher nickel prices have caused little stir in the trade. Demand is expected to continue improving modestly in the first quarter.

**WAREHOUSE . . .** The market is improving but not considered strong as yet. In **Cleveland**, business is relatively slow but picking up. **West Coast** reports increased pressure for quick deliveries; inventories are spotty. In **Chicago** the strong flat-rolled market has helped distributors, some of whom are complaining about deliveries from the mills; November a good month and December shaping up well.

### Purchasing Agent's Checklist

- TITANIUM:** Scrap use becomes a problem . . . . . p. 19
- WELDING:** Big gains for iron powder-coated rod . . . . . p. 22
- GALVANIZED:** Production surges ahead on continuous lines . . . p. 23
- FREIGHT CARS:** Business bad but future may be brighter . . . . . p. 24

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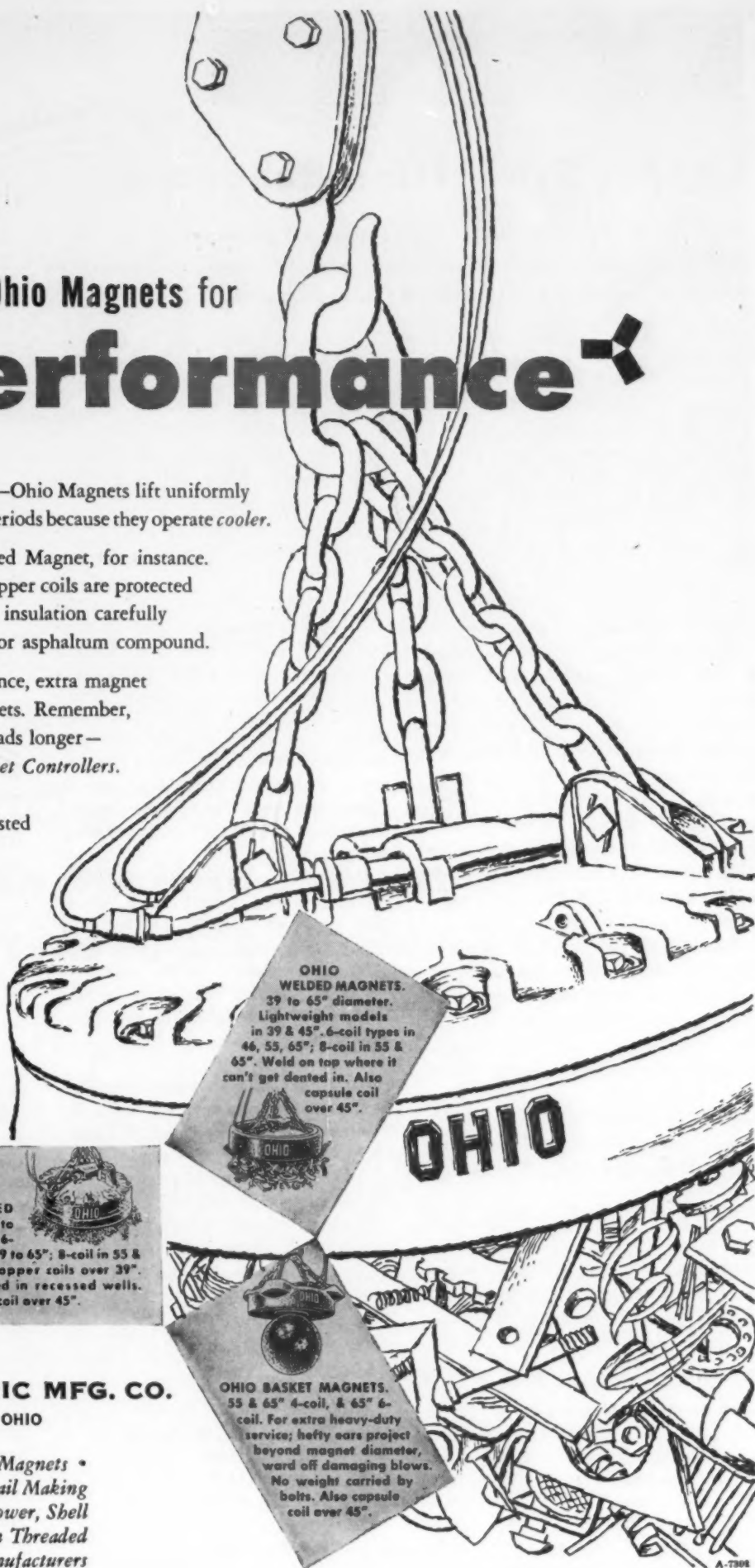
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December 23, 1954



# Copper Production Rebounds

**Domestic output of primary crude copper hit postwar high in November . . . Refined output up 26,691 tons . . . Deliveries to fabricators rise 17,615 tons—By R. L. Hatschek.**

♦ PRODUCTION again grabs the nonferrous spotlight this week as Copper Institute statistics show the extent of the rebound made in November. Domestic primary crude output hit 91,094 tons—the highest since May 1944. This is an increase of 22,615 tons from the preceding month. Refined production in the U. S. registered a gain of 26,691 tons from the October level to hit 118,949 tons.

Deliveries to fabricators, after a 16,095-ton boost in October, made a gain of 17,615 tons in November to total 122,908 tons. Delivery totals for both October and November included tonnages shipped by the government in its "Operation Lifeline." As for refined stocks held in the U. S. at the beginning of this month, the figure edged upward 3700 tons to a still very low total of 36,215 tons.

Statistical picture for producing members outside the U. S. is not quite so startling. These figures showed: Primary crude output, 133,420 tons (off 5000 tons); refined production, 107,000 tons (up 2600 tons); deliveries to fabricators, 108,268 tons (up 1100 tons); and refined stocks at the end of November, 178,977 tons (up 1000 tons).

Now that Commerce Dept. has concluded its copper distribution operation, the Department indicates it helped out more than 100 firms that were faced with shut-

downs because of short copper supplies. Distribution of nearly 41,000 tons was made directly by the government or indirectly through primary mills. Success of the operation is credited largely by the Department to excellent co-operation between copper producers and government agencies.

COPPER . . . Firmer trend on the London market—spot copper at over 35¢ per lb late last week—has had its customary effect on U.S. scrap markets. Custom smelters are paying up to 29½¢ for No. 1, 28¢ for No. 2 and 26½¢ for light copper. This is further reflected in dealer buying prices which are quoted ½¢ per lb higher this week for copper. General firmness is noted in other copper alloy scrap as well.

November shipments by the ingot makers totaled 23,061 tons, about 1000 tons less than October but still a good level when compared with most of the other months in the year.

Primary copper market is largely unchanged—still tight, but no longer dangerously so.

NICKEL . . . In his annual roundup of the nickel industry, Dr. John F. Thompson, board chairman of International Nickel Co. of Canada, Ltd., predicts 1955 free world production of 207,500 tons of nickel. This compares with about the alltime high of 195,000 tons set in the year just ending.

Canadian production in 1954 will total about 160,000 tons, of which Inco's will be some 137,500 tons.

Dr. Thompson expects that 1955 civilian supplies of nickel will be larger than in 1954—but the civilian uses will continue to take a back seat to military and stockpile buying.

ALUMINUM . . . General market bullishness is cited in the upward creep of secondary aluminum ingot prices. Fourth quarter was good and the trade feels that first quarter '55 will be just as good and perhaps better. Increases range from ¼¢ to ½¢ per lb. Practically all grades have felt the strength in the past week.

But despite these increases, there have been no boosts in scrap prices by either the ingot makers or scrap dealers.

LEAD . . . Action in the lead market has become even quieter in anticipation of the coming holidays. Tonnage traded last week was approximately 30 pct lower than the preceding week. Exception to this, of course, was the acceptance of tonnage offered to General Services Administration for the national stockpile. While this figure remains hidden in its cloak of security, it is generally assumed in trade circles that the quantity was of about the same order as in previous GSA purchases, namely approximately 10,000 tons.

London market has also been quiet with no great price fluctuations. Late last week the London quotation for December lead was at the New York equivalent, including duty and shipping charges, of just under 15¢ per lb.

ZINC . . . A year-end lull is definitely noted in the zinc market, too, though demand seems somewhat stronger than for lead. Diecasters in particular are holding up their demand for Special High Grade.

Producers last week received their acceptances from GSA for stockpile zinc. It's believed the tonnage sold to the government was about the same as last month, generally estimated at something near 15,000 tons.

As with lead, zinc was fairly quiet in London with the price at the end of last week about ¾¢ per lb below parity with New York.

TIN . . . General lack of confidence by both dealers and buyers has been causing a steady decline in tin which seemed to accelerate last week. Price dipped 2¢ per lb in the week ending Monday. Immediate cause seems to be delays in getting the International Tin Agreement working, though excess of supply over demand is the basic reason.

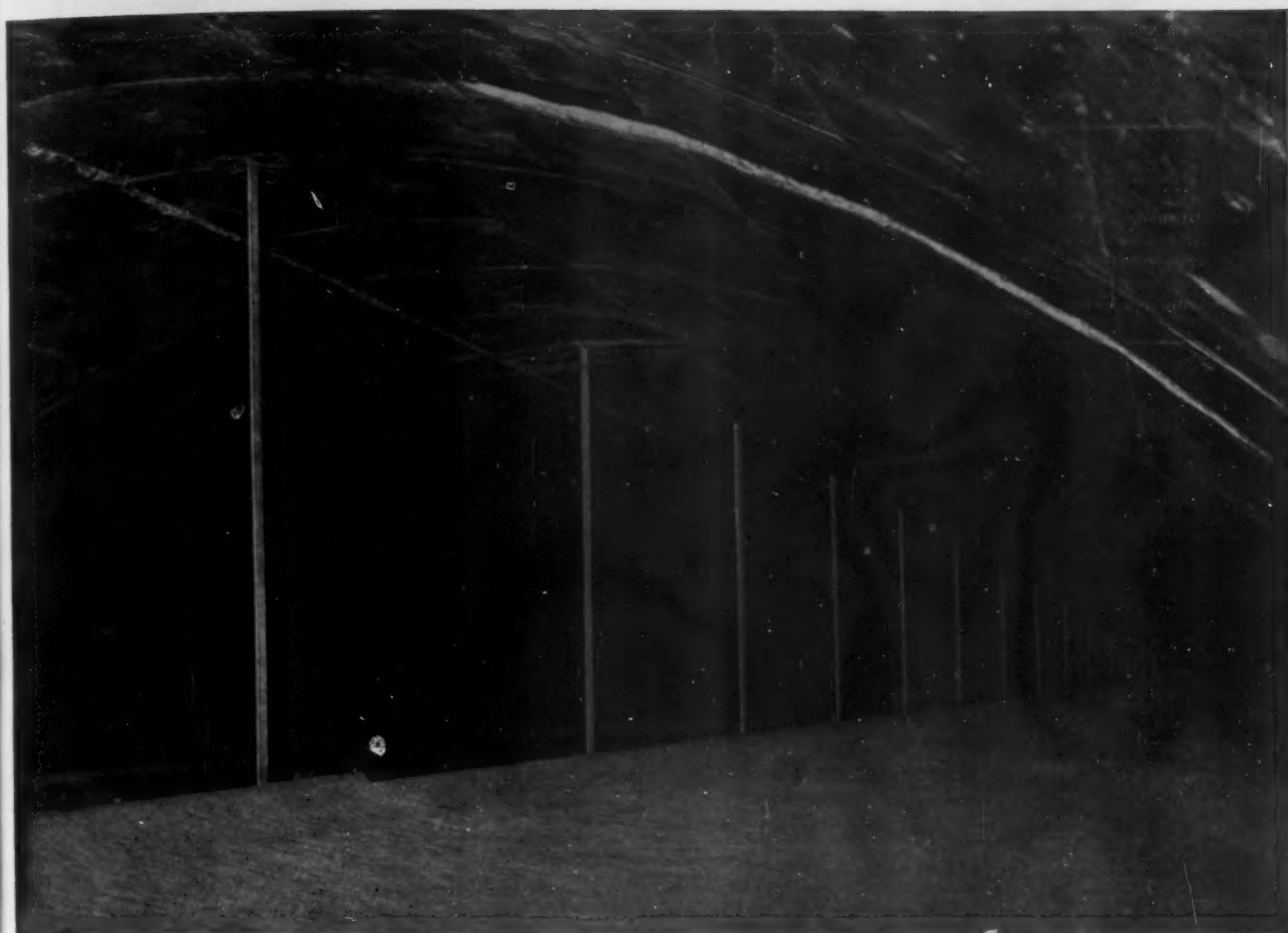
## Daily Nonferrous Metal Prices

(Cents per lb except as noted)

	Dec. 15	Dec. 16	Dec. 17	Dec. 18	Dec. 20	Dec. 21
Copper, electro, Conn.	30.00	30.00	30.00	30.00	30.00	30.00
Copper, Lake, delivered	30.00	30.00	30.00	30.00	30.00	30.00
Tin, Straits, New York	89.125	89.00	88.00	....	87.50	87.50*
Zinc, East St. Louis	11.50	11.50	11.50	11.50	11.50	11.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Note: Quotations are going prices

\*Tentative



**Tunnel within a tunnel** — 8500-ft. exhaust ducts along the center by 7-ft. lengths of 2½-inch by ⅜-inch hot-rolled Monel flats. These hangers are installed every 8 feet.

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December 23, 1954

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## THE CLEARING HOUSE

### News of Used and Rebuilt Machinery

#### How Normal Is Normal? . . .

Last week Chicago's used machine tool market was moving into its normal seasonal slump, which cuts December to about half a month businesswise, and slows January considerably.

The late arrival in the market of subcontractors supplying parts to the independent automakers doesn't seem to offset the usual seasonal setback. But where one group of dealers feels that the month will level with sales in the same month one year ago, another fraction believes December sales will fall to the level of January, 1954, a notably poor month. Whichever is right, the sales advance of the past three months is faltering for the present.

**See Good Quarter . . .** A clear majority believe that their own first quarter sales in 1955 will exceed first quarter 1954 and fourth quarter this year. To beat first quarter wouldn't be difficult, and would offset the downtrend that dogged the industry for the first three-quarters of this year, although most dealers in the Chicago area were mentioning improvements as early as late September. For at least a few firms, even with the December slump setting in, fourth quarter will be the best this year.

#### Inventories About Right . . .

With reports of high inventory problems filtering in from Detroit and the East, dealers here have been looking over their stocks more critically, but there is little feeling thus far that the individual dealer has bitten off more equipment than he can safely sell.

One reason for the greater satisfaction—the turn of the year usually sees a step-up in catalog and direct mailing material to prospects as they prepare for the spring manufacturing season.

Local dealers, after hearing the optimistic reports from business generally, are counting on doing better on inquiries and sales than they have been doing in December.

And a second group, that normally doesn't push sales in the year-end period, are putting on a stronger selling campaign in the year-end period than they have in recent years. While this won't have much effect until mid-January, it seems to be raising hopes locally, and making heavy inventories seem lighter.

#### Deliveries Stretchout . . .

For another reason — deliveries on heavier new equipment, in particular the pressing equipment, are stretching out and have been for about 45 days, which should help move some presses that were too heavy to take advantage of the fairly good volume that's been maintained in light sheet-metal forming equipment through most of the year.

Besides some business from the military aircraft industries, a jolt of orders from civilian plane producers has been surprisingly strong and has resulted in some fair tool shipments to outside areas. The combination accounts for some of the shipments to Indianapolis, St. Louis and Kansas City.

And along with the upturn in steel mill output of bar stock has come some good lathe business, though milling machines have moved up at about the same time and at the same pace. Light stamping and shearing equipment continues to hold a strong position and reflects the strength sheet, in both cold-rolled and galvanized, has shown in the Midwest through all of fourth quarter and the latter part of third quarter, which has come from heating equipment, appliance, farm equipment, and related agricultural equipment.